

OCTOBER 1924 ~ No 225

Monthly

A Reference for Buyers

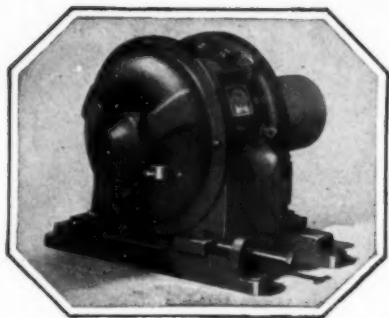
HITCHCOCK'S
**MACHINE
TOOL
BLUE BOOK**

Distributed Free to Machine Tool
Users Everywhere in the United States and to
Dealers in American Machinery Abroad

Published by
A.H.HITCHCOCK

1220-1236 Canton Building
Chicago

FOR INDEXES SEE LAST PAGES



A Service for Motor Users

The use of the right motor for any particular job is of importance to you from the standpoint of first cost, production rate of the driven machine, continuous service, and power cost. We are prepared to assist you in selecting the right motor.

Our engineers are constantly making studies of motor applications in various lines of industry. You are invited to make use of our experience in this work. If your particular problem has not been solved, we shall be glad to co-operate with you in working out a plan for obtaining the best results at the lowest cost.

Reliance Electric & Engineering Co.

1050 Ivanhoe Road, Cleveland, Ohio

Branches:

Boston New York Philadelphia Pittsburgh Chicago Detroit Cincinnati Birmingham, Ala.

We specialize in motors sizes $\frac{1}{2}$ to 200 h. p. constant and adjustable speed D. C.; squirrel cage and slip ring A. C.

Type A.A. RELIANCE
Induction Motors

The Nicholson Patented
Expanding Mandrels
Are Saving Lots of Money



Strong!

Rigid!

Accurate!

YOU LOSE no valuable time, nor is a job delayed, when a set of Nicholson's Mandrels are available. Compared to these up-to-date tools, solid mandrels are an expensive make-shift.

Nicholson Expanding Mandrels come in sets of nine, with two or three sets of jaws for each. And *one set* will cover the *entire* range between one-half and seven inches, inclusive. In other words, at least one of these mandrels will take absolutely *any* hole, no matter what it is, between these two dimensions, without calipering or guess work, and the nine will replace *all* the solid mandrels.

They are adaptable to work of the most varied nature. They save time and labor out of all proportion to their moderate cost.

*Write today for the instructive Booklet
and our 30-day trial offer*

W. H. Nicholson & Company

117 Oregon Street,

Wilkes-Barre, Pa.

The Only Difference

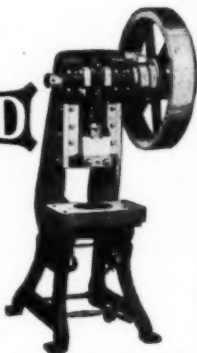
is not just price. The big thing is **service**. An investigation of the merits of

HIGH DUTY **ROCKFORD** PUNCH PRESSES

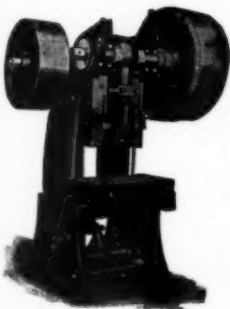
will give you a new idea of what you should get in punch press service. Definite, dependable reliability under all working conditions.

Write today for complete construction details.

Rockford Iron Works
ROCKFORD, ILL.



A Quality Inclinable Press Backed by a Real Guarantee



A Loshbough - Jordan Press cannot be overloaded while operating within its rated speed. Any shaft or frame broken under these conditions and within year of purchase will be replaced gratis.

Many features for convenience and safety of operator; long, satisfactory service; quality and volume of output excellent.

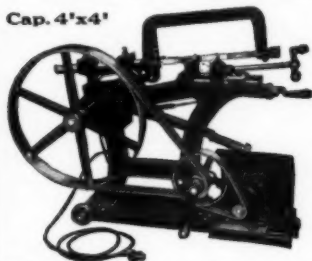
*Let us tell you about them
—or better, let us send a
press on 30 days' trial.*

Loshbough - Jordan
Tool & Machine Co.
Elkhart, Ind.

Motor Driven—Money Saving

Hack Saws, Both Stationary and Portable

Cap. 4'x4'

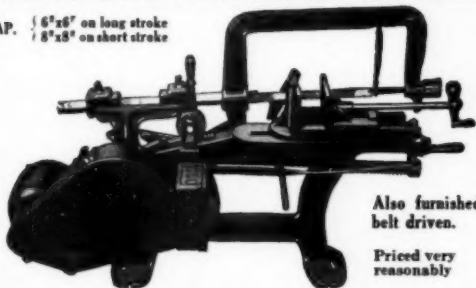


The Marvel No. 1

is portable, and is furnished all ready to run. Take it anywhere in your shop or plant, attach to a light socket, and go ahead with the work. An automatic stop is provided. Very reasonable price. Also furnished belt driven.

Marvel Draw-Cut Hack Saw No. 2

CAP. $\begin{cases} 6'' \times 67'' \text{ on long stroke} \\ 8'' \times 8'' \text{ on short stroke} \end{cases}$



Also furnished belt driven.

Priced very reasonably

This general-purpose Saw is substantial, smooth-running and of good capacity. Furnished either with motor for a high-power circuit as a stationary machine, or with motor for an electric light circuit so it may be moved around, ready for use when cord is attached to a light socket. Motor is connected to driving crankshaft by silent chain, sprockets and intermediate cut gears enclosed in cast iron housing and guard and run in oil. Circulars and prices on request.

Armstrong-Blum Mfg. Co.

341 N. Francisco Ave.,

CHICAGO, ILL.

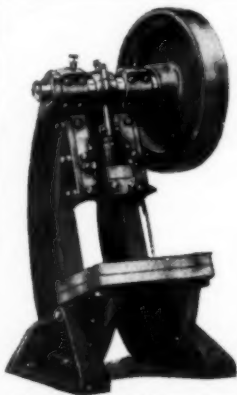
SOMETHING NEW



**Hand Power Presses, Shears, Notchers,
Punches and Dies, Etc.**

Write for Booklet

J.F. Kidder Mfg. Co., Burlington, Vt.



Trade **Verson** Mark

Punch Presses

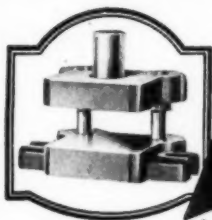
For Accurate Work

Ask your dealer
to show you the
"Verson" Line of
Power Presses,
or write direct for
circulars.

**La Salle
Machine Works**

3013 S. La Salle St., Chicago, Ill.

Manufacturers of Power Presses, Angle Shears and Dies



5 features

that lower stamping costs

You save considerable in first cost and obtain the following features when you buy Danly Die Sets:

1. Semi-steel castings, for strength
2. Surfaces ground, insuring parallelness
3. Leader pins and bushings hardened, ground and lapped
4. Accurate alignment; carefully inspected
5. All parts interchangeable for replacements

These features mean lower stamping cost, increased production, lower investment and real convenience.

*Immediate delivery from stock.
Order from catalogue by
style and number*

*Send for
price sheet
and catalog*



Die Sets

Leader and Dowel Pins

Bushings

Danly Machine Specialties, Inc.
4913 Lincoln Ave., Chicago, Ill.

"QUICKWORK"

(TRADE-MARK REGISTERED THROUGHOUT THE WORLD)

ROTARY SHEARS

MADE IN VARIOUS SIZES AND STYLES

For cutting all gauges of sheet and plate up to 1 inch thick used in building Ships, Boilers, Cars, Tanks and General Plate and Sheet Metal Work. Cut square or beveled edges in straight or irregular shapes, also cut rings and discs, and cut openings without starting in from side of sheet. Leaves the metal flatter than any other Rotary or Short Straight-Bladed Shear. Cuts a clean edge that requires no finishing.

Jogging and flanging rolls can be used interchangeably with the cutters.

Do Long Straight Cutting Faster Than Any Other Shear of Any Kind

One "QUICKWORK" does the work of a number of old style machines
Does it better and from two to ten times quicker

Eliminate Oxy-acetylene Cutting and Plate Planing

WRITE FOR CATALOG NO. 60

THE QUICKWORK COMPANY, St. Marys, Ohio, U. S. A.

Cable Address: "QUICKWORK." All standard codes used.

New York Exhibit: Grand Central Palace.

Agent for British Isles: Oliver Machinery Co., Manchester, England.

No Nicking, Breaking or Grinding With Peter Bros. Abrasive Metal Cutter

Makes a quick, clean, smooth cut thru hardened steel, brass, copper, aluminum, or any other tough metal. Does not nick or waste any material, nor spoil the temper. Will save five hours a day where it is used continuously. Will soon earn its cost

8" Size \$22.50, with C. S.
Splendid for tool room. Cuts all high-speed steel up to $\frac{3}{8}$ " square.

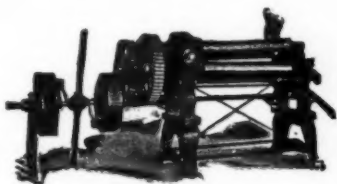
12" Size \$60, with C. S.
Cuts up to $2\frac{1}{4}$ " diameter, round or square, at any angle up to 45 degrees. Ball bearing.

15 Days' Free Trial

Write us or ask your dealer

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.





BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial, or side bending, type roll has been designed to meet the demand for a strong, efficient, quick acting roll for use where the heavier Pyramid Type is not required. It is especially adaptable for use in shops handling sheet metal and for the lighter class of work in Boiler Shops, such as stacks, breeching small tanks, and the like.

The upper roll is geared to the adjustable lower roll thus pinching the plate, while the idle roll, which is also adjustable, does the bending. The outer housing is hinged and the upper roll is raised by throwing a cam lever, thus permitting the removal of sheets bent to a full circle. All styles of these rolls are double back geared and require a minimum amount of power.

Built in twenty-six sizes with capacities up to 5/16" and from 14" to 98" between housings.

HENDLEY & WHITTEMORE CO.

100 S. State St.,

BELOIT, WIS.

RACINE "JUNIOR"

Portable—High Speed Metal Cutting Machine



Belt or
Motor
Driven.
Positive
Lift,
Draw
Cut.

This machine is a wonder in its class. Every shop needs this handy outfit. Can be moved easily and quickly to any location convenient to an electric light socket. So smooth in operation and so vibrationless that it need not be bolted to floor. Normal capacity 0" to 4" — with possible adjustment for cutting larger sizes. Complete and detailed information will be sent you promptly on request.

Use "Racine" H. S. Wood and Metal Band Saw Blades and
"Racine" H. S. Tungsten Power and Hand Hack Saw Blades.

RACINE TOOL & MACHINE CO.
Catalog H, 1429 Junction Ave., Racine, Wis.
"STANDARD THE WORLD OVER"

Combine Comfort and Lasting Service

Buy "Kalamazoo" Steel Factory Stools and Chairs

In 15 years we have learned to make them different and better. Frames or legs are $\frac{3}{4}$ " x $\frac{1}{4}$ " angle steel, strong and light. Seats made of 1" hardwood, securely fastened inside top ring. Backs concave, edges turned and rolled, supported by spring steel posts, giving flexibility. The forged feet have a large floor surface, which slides and does not injure floor. Made with and without backs, in many styles.

Write for Catalog and Prices

**Kalamazoo
Steel Goods Company**

408 E. Ransom St.,

Kalamazoo, Mich.

Style No. 102



Motor Drive

If it's a *Nazel Air Hammer*

geared direct to motor you have at once Economy of Power. Only when hammers are in operation and then only in proportion to work being done is power used.

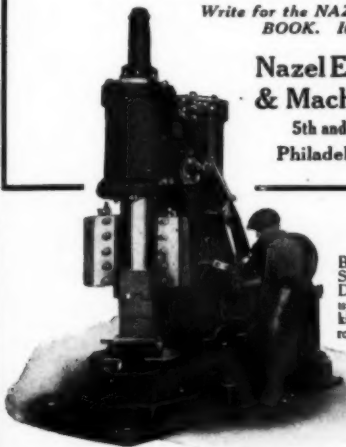
Unrestricted choice of position. Hammers with motors attached can be placed anywhere where electric current is available. No obstruction to cranes. The entire absence of belting or piping enables cranes to be used with greater freedom above and around hammers.

Separate Unit. Each hammer complete and independent. Greater advantage in case of an emergency, overtime or night work.

Write for the **NAZEL HAMMER BOOK.** It's free

Nazel Engineering & Machine Works

5th and Luzerne Sts.
Philadelphia, Penna.



Built in three types, Six Sizes Belt or Motor Driven, with capacities up to 7" square for all kinds of machine, railroad and general forging

NAZEL HAMMERS require no storage tanks, independent compressors or piping.



Style "WC"



Style "O"



The Hinge



Style "G"



Style "A"

Gits Gravity and Wire Wick Feed Oilers

Gravity Feed—flushes the bearing.

Wire Wick Feed—gives desired prolonged feed.

Wire Wick—replaces waste or felt.

Made in Standard sizes.



Style "L"

Write for Catalog No. 20

Showing 255 full size illustrations with detail dimensions.



Style "U"

GITS OIL CUPS

Oil cups for every lubricating need. State style and size in which you are interested, and we will send free samples and catalog.



Style "T"

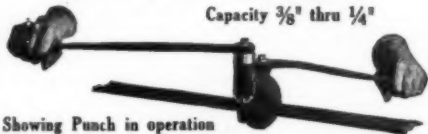
GITS BROS. MFG. CO

1940 SO. KILBOURN AVE., CHICAGO

WHITNEY BALL BEARING PUNCH No. 10

Lightest, fastest, easiest working tool made for punching sheet metal, angles, etc.

Capacity $\frac{3}{8}$ " thru $\frac{1}{4}$ "



Showing Punch in operation

With the elimination of friction, all the energy applied to the levers is transmitted to the punch. This permits a thread pitch impossible on any other punch, placing this tool *in a class by itself*. The spindle and drop-forged frame are made of special steels and heat treated. All parts made to jigs and interchangeable.

Write for description and our punch price list

Whitney Metal Tool Co.

95 Forbes Street,

Rockford, Ill.



Armstrong Tools



Tool Holders

Over 100 shapes and sizes for every operation on Lathe, Planer, Shaper, Slotter, etc. — the only complete line. Better have our Tool Holder Catalog.

Ratchet Drills

For all purposes—"Packer," for rough service; "Standard," for general use; "Weston," extra heavy; "Universal" and "Short Ratchet." Ask for Ratchet Drill Catalog.

Drop Forged Wrenches

All kinds. All sizes. Highest quality. Write for Catalog of Steel Wrenches.

Clamps and Dogs

Drop forged. All shapes and sizes. Highest quality. Alloy steel screws. Separate Catalog.

Armstrong Bros. Tool Co.

"THE TOOL HOLDER PEOPLE"

308 N. Francisco Ave., Chicago



Nos. 1, 2 & 5

When All Is Said

and done, you cannot beat our line of tools for cutting sheet, bar or round rods in iron or mild steels.

You can use our line of

Hercules' Shears and Rod Cutters

For cutting card, straw and fibre boards, brass and copper, gold and silver sheets, and hard rubber compositions.

Catalog No. 2 on request.

W. C. & F. C. TUCKER

HARTFORD, CONN.



Plain Shears Nos. 3 & 4



Do you fully realize the importance of using the most **Rugged Punches?**

T. H. L. PUNCHES are carefully made of the right quality of tool steel, so that *their users have continuous and profitable production.*

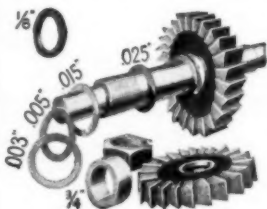
We carry large stocks of regular sizes for immediate delivery. Special sizes quickly made.

A trial order will please us both. May we have it?

T. H. Lewthwaite Machine Co.
417 East 31st St., (Est. 1890) New York City

Steel Spacing Washers—

Made of a good grade of Cold Rolled Strip Steel, also known as Shim Steel



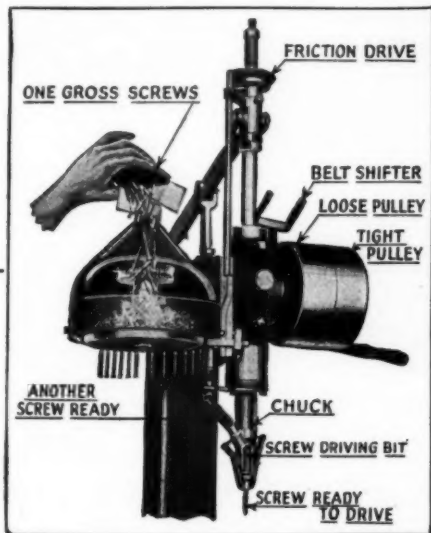
Stock sizes for arbors of following diameters: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{5}{8}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4 in. and larger.

Stock thicknesses: .002, .003, .004, .005, .006, .007, .008, .010, .012, .015, .020, .025, .032, .047, .063, .093 and .125 inch.

Other thicknesses up to 3.000" made to order, with keyways if so ordered.

Ask us to send samples; you'll like them

Detroit Stamping Company
3443 West Fort St., Detroit, Mich.



Screw Driving —

With MAGAZINE-FED Machines

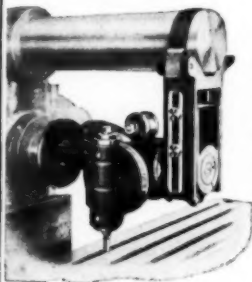
Just throw in a gross of screws, and the "Reynolds" automatically magazines and drives them perfectly.

Is it any wonder so many large plants are using one to thirty of them, and that users say they pay for themselves three or four times a year?

Let us know the dimensions over all of your work and the length of screws you are driving, and we'll tell you what we can do for YOU.

The Reynolds Machine Company
 Dept. H. H., Massillon, Ohio

FREE the SPINDLE



PORTER-CABLE
Universal Milling At-
tachments permit the
spindle to operate at
any angle in any plane.

Several sizes and styles

End Mills
Tool Room and
Production Lathes

THE PORTER-CABLE MACHINE CO.

SYRACUSE, N. Y.

The BARKER GENERAL PURPOSE VISE

For Planers, Shapers, Drilling and Milling Machines



Steel faced jaws

*Graduated to swivel
any angle*

*Extra heavy for
hard usage*

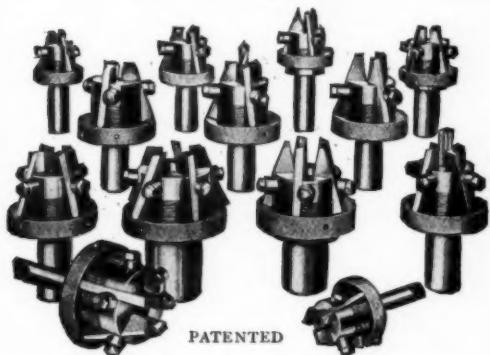
The screw runs through entire length of vise, with bearing on each end. Nut at rear equalizes strain. Sizes 8" and 12" General Purpose and 16" Mold Makers' Vise. Sturdily built, and so exceptionally handy that users would not part with them. Be sure to get our literature and prices before buying

WM. BARKER & CO.

Manufacturer of Machine Tools,

COVINGTON, KY.

Save the Buying Of Many New Tools



Genesee Adjustable Hollow Mills

THEIR GREAT ECONOMY is apparent when you consider that the blades are adjustable, are renewable at nominal cost, and that one set outlasts three to five solid tools. They quickly adjust to the 1000th of an inch, and they are built to keep machines keyed up to their capacity output.

THEY ARE IDEAL TOOLS for the finishing of forgings, castings, etc. Genesees can be fitted with drills and reamers, have formed blades, etc. Blades can be ground any angle to point work and turn short tapers. Unlike solid tools they never clog up with chips, change size, or lose their efficiency.

*"Shop Costs" often give you cause for worry.
Let us help you reduce them, the same
as we have done for hundreds of others*

Genesee Manufacturing Co., Inc.
Rochester, N. Y., U. S. A.

Manufacturers of Genesee Rapid Production Tools

Save Time Setting Gang Milling Cutters

Eliminate
Thin
Washers



Hardened
and
Ground

PATENTED

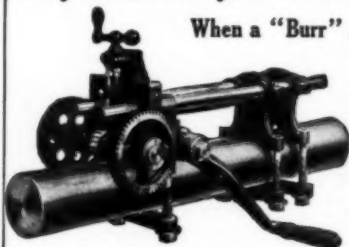
"Wear-Ever" Adjustable Spacing Collars
permit setting cutters to the thousandth part
of an inch without removing from the arbor.

*Stock sizes for $\frac{1}{4}$ " to $2\frac{1}{2}$ " arbors, sent on approval
They are adjustable in 12 steps of $2/1000$ inches*

SCULLY-JONES & CO. TOOL DIVISION
13th and Robey Streets CHICAGO, ILL.

Why dismantle your shafting —

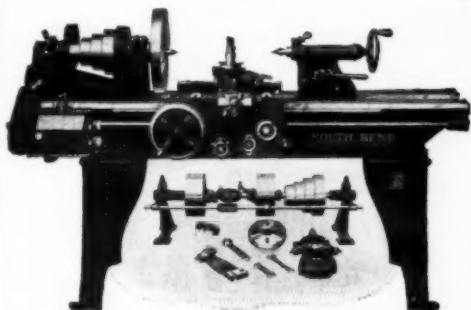
When a "Burr" is available?



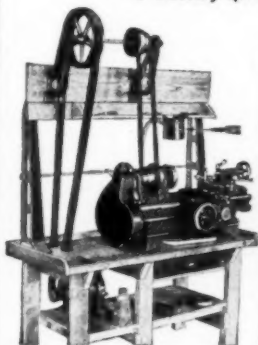
This handy, portable key-seater is always ready—whether for an emergency case or routine work. Cuts accurate keyways up to 12" long anywhere, in any position, in shafts up to 5" diameter.

Operated by hand or motor. Over 9,000
already in use. Your choice of seven sizes.
Why not order one now and be prepared?

JOHN T. BURR & SON
422 Kent Ave., Brooklyn, N. Y.



16"x8' South Bend Quick Change Gear Lathe
Price, \$498.00



11"x3½' Bench Lathe Unit
 Complete with D. C. Motor, \$315.50

EASY PAYMENT PLAN

Our Easy Payment Plan allows you to install a South Bend Lathe in your shop, by making one payment with the order; the balance to be paid month by month, the amount depending upon the size of the Lathe.

South Bend Lathes are made in all sizes from 9" to 24" swing, and bed lengths from 2½' to 16'.

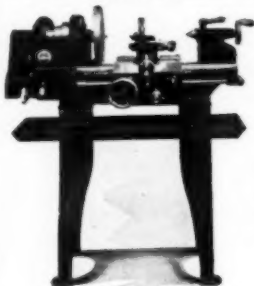
Write today for Catalog No. 82 which describes our Easy Payment Plan. Mention size lathe desired.

South Bend Lathe Works
 521 East Madison Street
 SOUTH BEND, IND., U. S. A.

SOUTH BEND LATHES

- 31,000 IN USE -

Monarch Jr. Lathes



are the smallest members of the Monarch lathe family. Yet they are the "biggest little lathes" built.

The Monarch line of lathes includes all sizes and types from the little 9-inch Junior lathe to the big, massive 30-in. lathe. In this line there is a lathe to fill your requirements at the price you want to pay.

Send for Catalog

The Monarch Machine Tool Co.

206 Oak Street, Sidney, Ohio

SEBASTIAN—



**15" Geared Head Lathe
Single Pulley Drive
Without Motor
\$765**

The knowledge, experience and skill derived from almost forty years of exclusive lathe building, has made *Sebastian Lathes* the standard of **QUALITY** in the medium priced lathe field.

Designed Right—Built Right—Priced Right and Guaranteed Correct

Write for details on our new Gold Seal Lathes

The Sebastian Lathe Company

1000 Culvert St.,

Cincinnati, O., U. S. A.

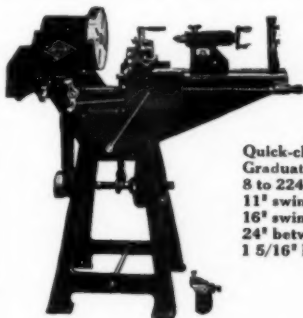
Think!

Would you use a five-ton truck for quick delivery of hundred-pound packages?

Yet many shops use large, cumbersome tools on work that can be handled more quickly and profitably in machines costing less than one-third the price of the larger tools.

How much of **YOUR** work can be done in a Lathe swinging 11" over the bed—16" over gap and taking 24" between centers—1 5/16" stock thru spindle?

THE ARTISAN LATHE has demonstrated its fitness in hundreds of shops doing all classes of work. Its sturdiness, power and capacity are not equalled in machines costing several times its price

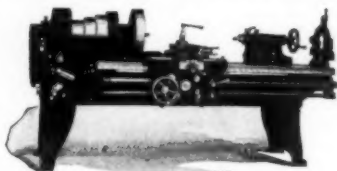


Quick-change gears
Graduated compound
8 to 224 thread range
11" swing over bed
16" swing over gap
24" between centers
1 5/16" hole thru spindle

If your livest dealer cannot demcnstrate this Modern Lathe to you, WRITE TODAY for full particulars

Artisan Mfg. Co. 839 West 6th St.,
Cincinnati, Ohio

SIDNEY LATHES



Accuracy, strength, and a size for every requirement.
Medium, Standard and Heavy Patterns.

Write for complete catalog

The Sidney Machine Tool Co.
Sidney, Ohio

E-Z THREAD DIAL E-Z

New device
lowers cost
of thread
cutting on
engine lathes.

For all
size lathes.

E-Z to
attach.

Send for
folder.



Eliminates
stopping or
reversing the
lathe.

Saves cost of
backing belt.

Saves power
to drive same.

E-Z to use.

Sent on fifteen
days' trial.

**JAMES M. COLVEN, 20 Wolffe Street,
Yonkers, N. Y.**



**If you ever ran a lathe it has surely happened to you.
It continues to happen daily in almost all shops.**

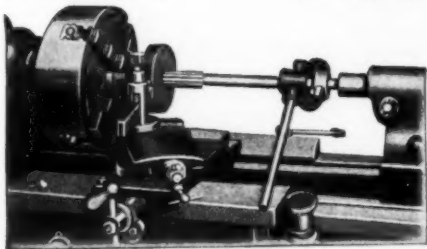
Until the Nicholson Reamer Holder was invented there was no other method by which a mechanic could keep his reamer from jumping in, or prevent it from reaming a tapered hole. This Holder can also be used instead of a chuck for drills and as a hold back in a lathe. It has many uses and saves double its cost in a short time. No. 1 size takes straight shank reamers and drills up to 1" dia., and No. 2 takes up to 2" in dia.

Send us sketch of socket or number of Morse taper of lathe you would like to try one on, and we will send it on trial. If you desire further information and circular, write us.

W. H. Nicholson & Company

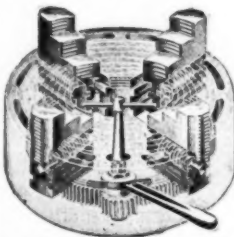
117 Oregon Street,

Wilkes-Barre, Pa.



The Westcott "Combination"

Does the Work of TWO Chucks



This one single Combination chuck does the work of an Independent and a smaller Universal.

It is both *universal* and *independent* at any position of the jaws.

Handles work the full swing of the lathe.

It is the *chuck of economy*.

Glad to mail you full particulars

Westcott Chuck Company

Originators of the COMBINATION Chuck

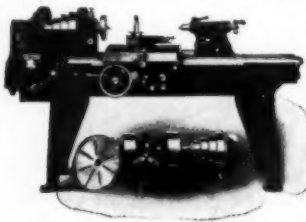
Lock Drawer "P"

Oneida, N. Y.

A. V. Carroll Lathes

Have patented invisible gap without extra cost

Made in sizes 12", 14", 16", 18" and 20"



High quality at the lowest possible cost to you.

Easy payment plan if desired.

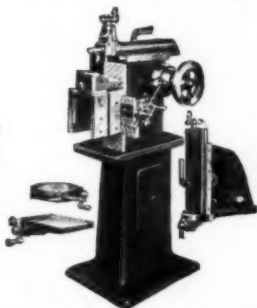
Write for circular, and let us show you a big saving

A. V. Carroll Machine Tool Co., Norwood, Cincinnati, O.



For Small Shaping And Slotting

Shaper
Stroke
7 in.



Slotter
Stroke
3½ in.

Rhodes Combined Shaper and Slotter

THE RHODES is built like the larger machines in everything but size, but it costs much less, is more economical in operation, and is more readily manipulated on work within its capacity.

Some users find that it does most of their shaping and slotting—with others it relieves the larger machines to splendid advantage.

*Ask your dealer or write for
CATALOG H22*

The Rhodes Mfg. Company
948 Park Road, - Hartford, Conn.

SHAPERS—RHODES—SLOTTERS



Special Machinery

Contractors, Builders, and
Designers

C. H. Cowdrey Machine Works

Established 1875

Fitchburg, Mass.

Dependable Service on Hollow Bored Forgings and Steel Shafts



If you make machines on which you use *Lathe Spindles, Piston Rods, Rams, Clutch Shafts*, or similar parts, let us quote on your requirements. Our products are right, our prices are right, and our service is dependable.

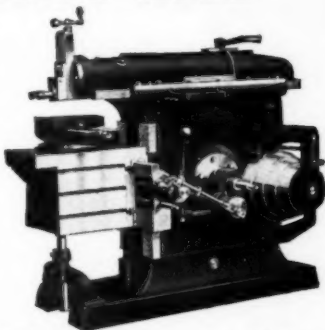
Send along blueprints; we'll both be pleased with a trial order

American Hollow Boring Co.
Erie, Penna.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

32" Back
Geared
Crank, Sin-
gle Pulley
Drive.



The Smith & Mills Co., Cincinnati, O., U.S.A.

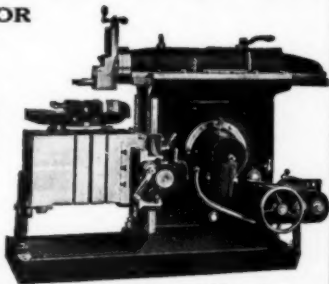
COLUMBIA SHAPERS

**SUPERIOR
HEAVY
DUTY**

Columns are without
overhang in front,
allowing longer trav-
erse of ram on angular
cuts. Are extended
at rear to afford long
bearing for ram.

SIX SIZES
16"—20"—24"
28"—32"—36"

*Bulletin No. 7 giving
full details sent free
on request.*



Cone, Single Pulley and Motor Drive

THE COLUMBIA MACHINE TOOL CO., HAMILTON, O.

Manning, Maxwell & Moore, Inc., Selling Agents, New York City and Branches



Fibre Faced Hammer

Better than a ball pein
or lead hammer for most work

PRICES

5 oz.	$\frac{3}{4}$ " face	\$1.00
10 oz.	1" face	\$1.00
16 oz.	$1\frac{1}{4}$ " face	\$1.25
24 oz.	$1\frac{3}{4}$ " face	\$1.35

W. W. Oliver Mfg. Co.

1495 Niagara St.,

Buffalo, N. Y.

Hardinge Standardized Draw-in Chucks or Collets



All Sizes of Collets—
For All Makes of Lathes } Carried in Stock

Collets for Bench Lathes, Engine Lathes, Tool Room Lathes, Bench Type Milling Machines, also Collets for Screw Machines—always ready to ship.

*Write for Price List and keep it for reference
You will find us a reliable source of supply*

HARDINGE BROS., Inc., 1770 Berceau Av. CHICAGO, ILL.



Check your choice:

- Excellent
- Good
- Fair
- Punk

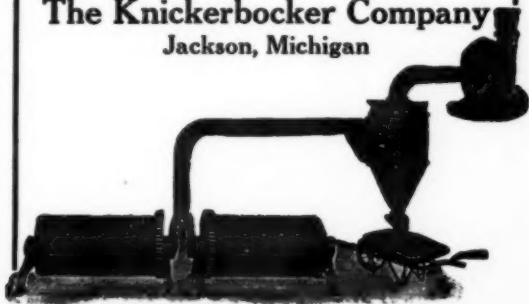
BUT WHY NOT PROFIT by the experience of others—of expert engineers who thoroughly tested various makes of collectors and finally were convinced that the

“Rarefied” Dust Collector

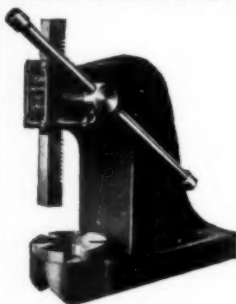
had by far the most points of excellence? They found greater efficiency, a saving in power, and its scientific construction reduced repairs to practically nil. It is operated on the “rarefied” or partial vacuum principle, which draws the air thru the collector and removes the dust before the air reaches the fan. No matter how difficult your dust problem—whether heavy, grinding, gritty, flinty or cutting dust—the “Rarefied” is the best solution.

Our interesting Booklet is yours for the asking

The Knickerbocker Company
Jackson, Michigan



Sheldon Arbor Presses



Semi-Steel Frames.

Alloy-Steel Rams and Pinions. Heat Treated.

Large Stub Teeth.

Square Rams, carefully fitted, insuring proper alignment.

Ask for complete catalogue and price list

SHELDON MACHINE COMPANY

403 East 29th Street,

CHICAGO, ILL.

The American Vertical Broaching and Assembling Press



A ruggedly built, highly efficient machine, with a capacity of six to eight tons pressure, at the low price of only

\$475

Maximum stroke, 18 in.; space between frame, 12 in.; floor space required for operation, only 4½ feet square.

Write for further details

American Broach and Machine Co.

Ann Arbor,

Michigan

Rigidity—Power—Economy

Are combined in our
up-to-date, convenient

One-Man Four-Post Screw Press —delivering 80-Tons Pressure



Type BB

Your tool maker requires *no help* in handling any dies. Machine is sensitive, rigid, powerful. Perfect alignment of punch and die is assured.

Abundant room between bed and ram. We also make three smaller sizes. Table of Type BB is 20"x36".

A Surface Grinder

that's a revelation in quiet efficiency. Its rigidity insures accuracy. Has non-vibrating wheel. Both feeds have graduated dial.

Let us send folders and prices

JARECKI MACHINE AND TOOL CO.

Successor to Manhattan Machine & Tool Works
Dept. A. GRAND RAPIDS, MICH.





Atlas Arbor Presses

For All Forcing Operations

Illustration shows our No. 55 Power Drive Press, which is adaptable for fast production work and capable of supplying ten tons pressure.

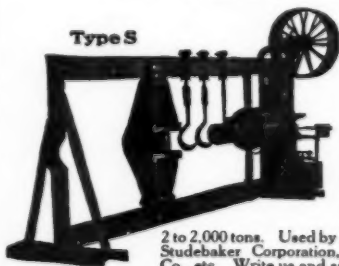
*Write for our Bulletin—
showing 30 different sizes*

Atlas Press Co.

*Department B,
Kalamazoo, Michigan*

Used in the Biggest Plants

Lourie Hydraulic Presses



Type S

We have, or can make for you, just what you need in Hydraulic, Power or Arbor Presses.

They are quick acting, powerful, money-saving equipment—built from

2 to 2,000 tons. Used by Ford Motor Co., Studebaker Corporation, Timken Axle Co., etc. Write us and save money.

Lourie Mfg. Co., Springfield, Ill.

Even On Small Lots, BUNTING Saves You Money



Hundreds of manufacturers who are operating on reduced production schedules are buying BUNTING Machined and Finished Bushing Bearings as they need them without any sacrifice of production economy.

There are 269 different sizes of BUNTING "Ready Made" Bushing Bearings ranging from $\frac{5}{8}$ -inch outside diameter by $\frac{1}{2}$ -inch inside diameter by $1\frac{1}{4}$ -inch length, to 4-inch outside diameter by $3\frac{1}{2}$ -inch inside diameter by $5\frac{1}{2}$ -inch length. Write for Stock List W.

SPECIAL SIZES AND ALLOYS of bronze bushing bearings. This organization has proven that it can sell finished bronze bushing bearings of any specification at a price below any cost that the user can reach by making them in his own shop. And BUNTING quality is never questioned.

BUNTING'S BRONZE BAR SHOP ASSORTMENT—5 bars of BUNTING Phosphor Bronze in a strong wooden box meets every emergency need. Write for Bar List S-205.

THE BUNTING BRASS & BRONZE COMPANY TOLEDO, OHIO

Branches and Warehouses at

NEW YORK 245 West 54th St. Circle 0844	PHILADELPHIA 1330 Arch St. Spruce 5296	CLEVELAND 710 St. Clair Ave., N.E. Main 3991
BOSTON 30 Oliver St. Main 8488	CHICAGO 722 So. Michigan Ave. Wabash 9153	
SAN FRANCISCO 198 Second St. Douglas 6245		



BUNTING BUSHING BEARINGS

A Tool Well Worth Having

Unsolicited testimonials prove the value of this tool. It is a Keyseater that is used in the drilling machine.

Get Catalog O

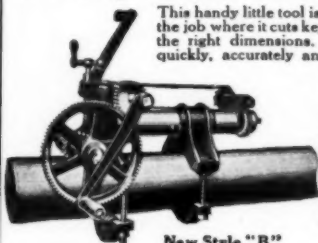
National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.



A Strong Portable Key-Way Cutter



This handy little tool is easily taken right to the job where it cuts key-ways of just exactly the right dimensions. It does the work quickly, accurately and at minimum cost, saving labor and money. Just clamp the tool to the shaft and turn the crank.

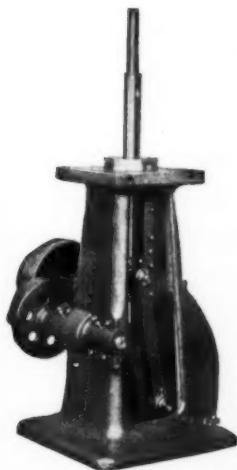
Style "B" has six milling cutters and cuts keyways from $\frac{1}{4}$ " to 2" wide, in shafting 2" to 6" in diam. and 12" long without resetting.

New Style "B"

Write for prices and literature illustrating and describing several models, including motor driven machines.

THE BUCHER-SMITH CO.
East Liverpool, Ohio

Rapid NEW Catlin Keyseater Makes NEW Low Cost Records



*Favor us with your inquiry.
We shall be glad to mail the
interesting folder and answer
questions.*

*Popular in
Automobile Plants
Government Shops
Navy Yards
and many big
Domestic and
Foreign Factories*

Whether you need one keyseat or a thousand, the rapid "Catlin" will cut them to even better than 1000th of an inch accuracy. And its great speed explains its great economy. It cut a keyseat 6" long, 1" wide and 7/16" deep in a cast steel hub, in 3 minutes; this was in ordinary shop practice, with no attempt made to establish a record.

The picture shows the No. 1 Catlin, belt driven, with three-step cone pulley. Our other sizes, for belt or motor drive, cover practically all keyseating requirements.

Chattanooga Machinery Company
2401 Bennett Ave., Chattanooga, Tenn.

A Profit of 500% a Year

*Built Since 1887
Better now than ever*



TOWSLEY TRUCKS

Are made in every style for every need. Efficiency experts say they pay for themselves every two or three months.

Write us for details of big truck profits

John T. Towsley Mfg. Co., Cincinnati, Ohio

Weigel Double-Wheel "Trukaster"

Has heavy plates and axles. Easiest running, strongest and most durable double-wheel caster made. Lasts three times as long as others.

"Kwality Kaster"

(See Illustration)

The strongest and most durable single caster. Won't crush or break. Swivels on steel machined rollers.

Write for Price List

**THE HAMILTON
CASTER & MFG. CO.
HAMILTON, OHIO**

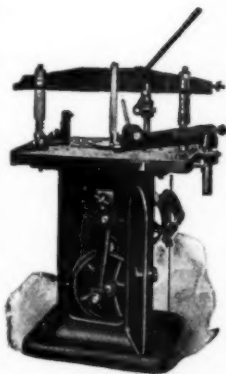
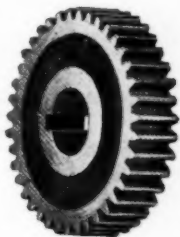


Every Shop

of more than one horse
power has hundreds of

Keyways

like this
to cut.



No. 11 Keyseater

For that purpose there
is nothing so satisfac-
tory as

Davis Keyseaters

Sizes 1 and 2 with ca-
pacity of cut from 1/16
to 1 inch.

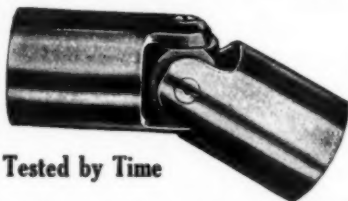
Cutters of standard
sizes, in special broach
and high speed steels,
carried in stock.

Write for complete information

Davis Keyseater Company

255½ Mill St., Rochester, N. Y., U. S. A.

Vanderbeek Giant Joints



Efficient to
an angle of
45 degrees

Vanderbeek
Universal
Ball Joints

Tested by Time

Used by U. S. Gov't. and Best Shops

These joints are entirely enclosed against dirt, are self-oiling, have all wearing contacts of hardened steel of large diameters, and designed for the most severe strain.

American Tool Works, Inc.
Hartford, Conn.



"Borgeson Universal Joints"

**Are you a user of Universal Joints?
If so!**

Remember well and bear in mind that a good Universal Joint is hard to find. But if you want one tried and true, you will want the "Borgeson" before you are through.

You will become not only a "Buyer" but a "Booster" for "Borgeson."

SIZES: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$,
 $1\frac{1}{2}$, $1\frac{3}{4}$, 2, $2\frac{1}{2}$, $2\frac{3}{4}$.

Should you require Special Universal Joints, be sure to write for quotation.

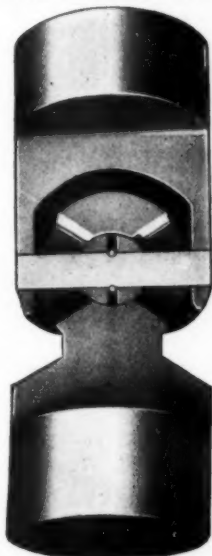
*Complete description gladly
furnished upon request*

The Borgeson Mfg. Co., Inc.
Torrington, Conn.

APEX UNIVERSAL JOINTS

Require Very Little Attention
and Give a World of Service

Cut
Your
Repair
Cost



Let Us
Show
You
How

Write for **PATENTED** *Bulletin No.10*

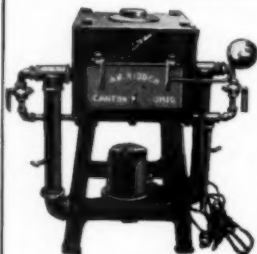
An Ideal Joint for repairing Multiple
Spindle Drilling and Tapping Machines.

THEY FIT ALL MAKES

THE APEX MACHINE CO.
DAYTON, OHIO

Single Unit Heat-Treating Furnaces

Forge, Semi-Muffle, Full Muffle
and Combination Types



Furnaces for annealing, carbonizing, melting, hardening and tempering; in a full range of sizes to meet the needs of the small tool room or machine shop, as well as the largest manufacturing plant.

*Ask the man who uses one;
if you don't know him, ask us*

A. B. KIDDER, 1104 5th St., N. E. CANTON, O.

POWELL BLOW GUN

Designed to dispense air with utmost economy.
Used for cleaning machines, machine tools and work benches.



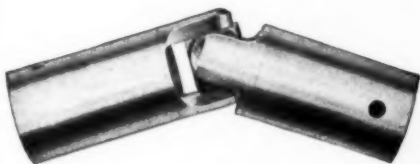
Made with different tips for special requirements.

Circular on request.

The Wm. Powell Co.
2525 Spring Grove Ave., Cincinnati, O.

NATCO

Universal Joints



The interchangeable method of manufacture of NATCO Universal Joints permits repair parts replacement to overcome natural wear. Complete replacement is very seldom necessary.

Manufactured in the following sizes—
 $\frac{3}{4}$ "—1"—1 $\frac{1}{4}$ "—1 $\frac{1}{2}$ "—2"

*Descriptive Bulletin will be
sent on request.*

National Automatic Tool Co.
Richmond, Indiana

FEDERAL DIAL COMPARATOR



DESIGNED FOR

The rapid checking of parts to close limits by unskilled labor.

Furnished with Indicators graduated .001" — .0005" — .0001".

Does what an Amplifying Machine will do and costs less than half as much.

Send for our complete catalog of Dial Indicators, Cylinder Gauges, Comparators, Thickness Gauges, Piston Gauges, Rubber Gauges, Piston Pin Gauges, Fabric Gauges, Paper Gauges, Wire Gauges, Piston Ring Gauges, Thread Lead Gauges.

Federal Products Corporation
Elbow & Chestnut Sts., Providence, R. I.

Compact—Sensitive—Accurate—Durable The "ATLAS JUNIOR" INDICATOR

Reads over a range of 0.055"—at a glance. Dial may be set at zero after adjusting to work. Contact point can be locked in position for inspecting. Keep it in your pocket and use it anywhere. Details?

PRICE \$7.50



Sold by Dealers or Direct

WALLACE BROS.

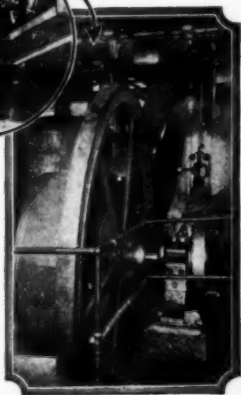
160 N. Wells St., Dept. B.B. CHICAGO, ILL.

"WHITNEY"

Silent Chain Drives



*Look
at this
carefully!*



In the circle is a "WHITNEY" Silent Chain. It is doing the work formerly done by the obsolete engine and drive below—at lower cost and continuous, uninterrupted use.

NEED WE SAY MORE?

Let our engineers fit the Drive to the job

THE WHITNEY MFG. CO., - HARTFORD, CONN.

Sales and Engineering Offices

NEW YORK, L. C. Biglow & Co., Inc., 243 West 55th St.; BOSTON, George C. Steil, 740 Commonwealth Ave.; PHILADELPHIA, R. J. Howison, 624 Race St.; PITTSBURGH, Pittsburgh Gear & Machine Co., 27th & Smallman Sts.; SAN FRANCISCO, A. H. Coates Co., Industrial Drive & Equipment Co., 615 Howard St.; SEATTLE, A. H. Coates Co., 1115 East Union St.

Chains and Sprockets for Power Transmission



Why Break Taps?

**The Woodstock Improved
Safety Tapping Chucks
Eliminate this Waste**

No matter how difficult the work, the Woodstock makes it safe to tap tough metals, blind tapping, and bottom tapping in shallow holes where a stop on a machine becomes a joke.

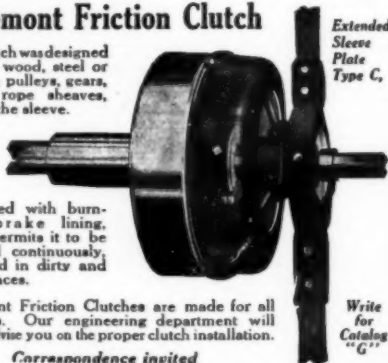
This money-saver automatically releases tap the minute it binds or strikes bottom. The five sizes use standard taps.

Glad to send you one on trial

Peter Bros. Mfg. Co., 115 Railroad St.,
ALCONQUIN, ILL.

Edgemont Friction Clutch

This clutch was designed to drive wood, steel or cast iron pulleys, gears, drums, rope sheaves, etc., on the sleeve.



It is lined with burn-proof brake lining, which permits it to be operated continuously, and used in dirty and dusty places.

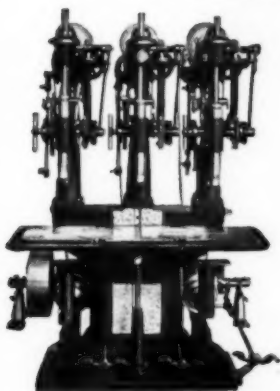
Edgemont Friction Clutches are made for all purposes. Our engineering department will gladly advise you on the proper clutch installation.

Correspondence invited

Edgemont Machine Co., Inc., DAYTON,
OHIO

Write
for
Catalog
"G"

Superior Conveniences Increase Your Output



*With the
Rockford
Automatic
Gang
Drilling
Machine*

Built with 2, 3, 4 and 6 Spindles—Box Column Type

Superior Equipment always pays. Here's a combination of the latest design, best materials and highest class of workmanship. And better equipment naturally begets a better product.

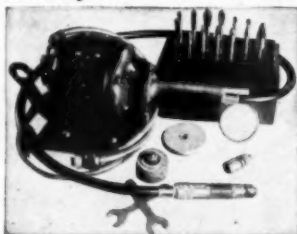
Automatic Return—When each spindle has completed its operation it automatically returns to its highest position, where it remains until the starting lever is tripped, when it immediately drops to position above the work.

Please Note that by removal of the stop pin in the cam, the spindle will immediately return to lowest position above work, and when tripped by automatic stop, will return to highest position and immediately drop again to work, repeating the movement automatically until the power is shut off. The spindle can be pulled ahead of the feed while in operation, a great advantage in drilling through a cored piece, piping or similar work.

We invite you to submit your drilling problems to us

Rockford Drilling Machine Co.
Rockford, Illinois

30-Day Offer ^{On} the Pattern Maker's Pal



Consisting of
 1/4 h. p. Westinghouse motor
 No. 5x4' shaft
 No. 5x4' sheath
 Can of grease
 No. 5 handpiece with two wrenches
 Super service drop cord and switch
 14 Burs in block
 Grinding spindle
 3" Grinding wheel
 Sanding drum

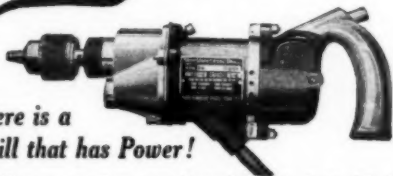
Regular price of 110 volt, a. c., 3450 r. p. m. outfit is \$75. Our special 30-day offer at **\$63.**

Regular price of 110 volt, a. c., 1725 r. p. m. outfit is \$70. Our special 30-day offer at **\$60.**

Only 65 sets at these prices. First come, first served.

The Hergi Mfg. Co., 250 Fifth Street, Bridgeport, Conn.

Thor Portable Electric Drills



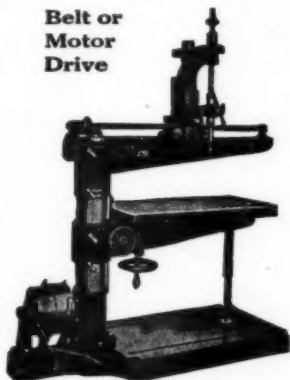
*Here is a
 drill that has Power!*

You'll say so, too, when you see this sturdy portable electric drill, drilling clean-cut holes thru the hardest materials. ¶ Then, too, Thor drills are built of easy running, rugged parts that insure durability and economy. Jacobs Chucks, ball and roller bearings, double silk wound coils, and other high grade parts are standard equipment. ¶ There is a Thor drill for every drilling job. There is one for yours. Our catalog illustrating 64 models will show you which it is. Write for it.

Independent Pneumatic Tool Co.
 600 West Jackson Blvd., CHICAGO, ILL.

The Taylor & Fenn Sensitive High-Speed Radial

**Belt or
Motor
Drive**



This great manufacturers' drill combines the speed of the sensitive with the flexibility of the radial, for practically all drilling requirements within its range. Drill the big pieces on the base and the small pieces on the table.

Tapping heads, power feed heads or hand lever feed heads may be used singly or in combination.

The drive is positive, through gears and silent chain. The spindle has three speeds and is bored for No. 2 Morse taper.

*A thorough investigation of this machine will repay you
We shall be glad to furnish complete data upon request*

The Taylor & Fenn Co.
Hartford, Conn., U. S. A.

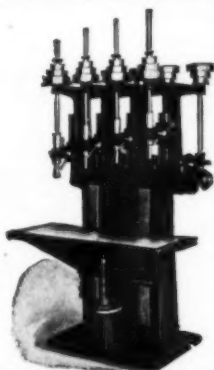
Substantial Sensitive Drills

**Overhang 7"
Capacity $\frac{1}{2}$ "- $\frac{5}{8}$ "**

Note width of table bearings and large base.

FRANCIS REED CO.

43 Hammond St.,
WORCESTER, MASS.



The "UTILITY"— Counterbore and Spot Facer



With the Pilot that cannot twist off. The Cutters don't break, and are easily removed from the holders. The set screws don't loosen.

The Holder is accurately ground and heat-treated, and the cutters made of high speed steel are scientifically tempered.

The Featured Improvements make it unrivaled for dependability and economy. Write for the Catalog.

The J. C. Glenzer Company

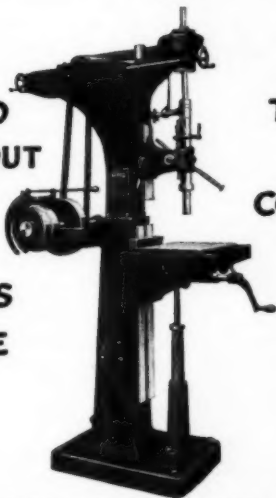
6469 Epworth Boulevard
DETROIT, MICH.

\$

GET
THE
Avey

\$

TO DO
WITHOUT
AN
AVEY
COSTS
MORE



THAN
IT
COSTS
TO
BUY
IT

\$

THE AVEY DRILLING
MACHINE CO.
CINCINNATI
OHIO

\$



Multiple Spindle Drill Heads

Made regularly with 2 to 6 adjustable spindles to drill in any pattern. Special heads to order.

Also made with fixed spindles of any practicable type to fit your work.

They drill two or more holes with the same speeds and feeds you use for drilling one.

May we help you?

The United States Drill Head Co.
1952 W. Sixth St., Cincinnati, Ohio



A Real Quick Change Drill Chuck

No hammer or special device required. No separate drift or key to get mislaid. Simply strike the end of drill, and out it comes. A one-armed man can do it.

The Titan Drill Chuck

has all the good features of other chucks of this type, plus a "quick change" that's real. Operates in any position.

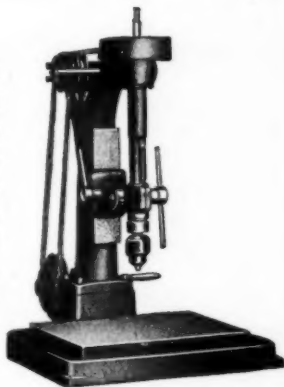
Made in sizes No. 0 to No. 5 for any taper shank drill, counterbore, reamer or similar tool. Saves time; cuts costs.

Write for description and prices

Titan Tool Company
Erie, Penna.

Drilling at 10,000 R. P. M.

One of our customers is drilling holes .025" diameter $\frac{1}{8}$ " deep in brass rods on this machine and getting a production of 1980 pieces per hour.



If you have similar work, your operators can get this production on*

Leland-Gifford High Speed Drilling Machines.

Let us help you on your drilling problem

Leland-Gifford Co.

Worcester, Mass.,

U. S. A.





Drill Press Attachment
FOR
Driving Screws and Nuts
Several Sizes

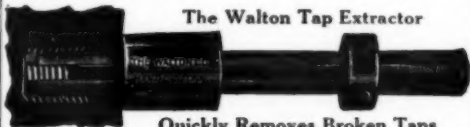
Manufactured By
N. A. Strand & Co.
CHICAGO
5001 North
Lincoln
Street

**Drive
Them Down
by Power**



Saves Much—Costs Little

The Walton Tap Extractor



Quickly Removes Broken Taps

Taps often break at or below the surface of the work. It takes time and costs money to get them out.

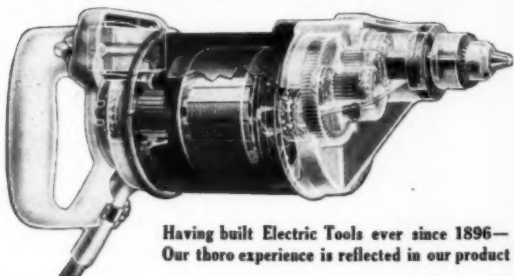
The Walton makes it easy for anybody to remove the broken piece. Just insert the "fingers" of tool, give it one or two sharp turns and your trouble is over.

We make them in sizes from No. 8 to 1½", and ship on 60 days' approval. Did you say "ship"?

THE WALTON CO., Hartford, Conn.

All "HISEY" Portable Drills

Have a Motor of Special Build



Having built Electric Tools ever since 1896—
Our thoro experience is reflected in our product

THE SPECIAL "HISEY" Universal Motor is the staunch and reliable heart of all our Portable Drills. It is of all ball-bearing construction, and is unsurpassed as to quick accessibility and lasting durability. This motor positively does not operate at dangerously high speeds, hence wear is reduced and life of drill is greatly prolonged.

"HISEY" CONSTRUCTION includes ball-bearing gear spindle and chuck spindle; ball-bearing motor shaft; quick cable connector; famous "HISEY" patented switch; an improved ventilating fan, etc., etc.

POWER—has power in abundance for any work required within its capacity, with plenty to spare.

CURRENT—uses less current than any portable drill of the same rated capacity.



Users will tell you that up-keep costs of the "HISEYS" are lower than those of other drills. To understand more fully—

WRITE FOR BULLETIN No. 106-H

Hisey-Wolf Machine Co.
Cincinnati, Ohio

Agencies in All Principal Cities

GRANT Noiseless Rotary RIVET SPINNER



For Speed, Economy and for Work of the Highest Quality

Speed:—One rivet per second.

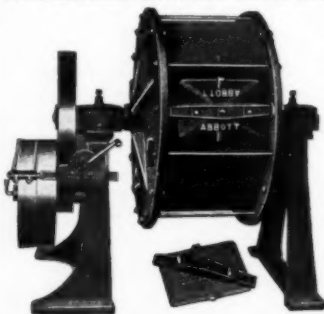
Economy:—Its rapid production makes it extremely economical.

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Also send samples of work for riveting*

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

**Where hand buffing costs dollars
The Abbott Process costs cents**



Abbott Burnishing Barrels burnish small metal parts at a saving of 75% to 99%.

Lately equipped with new features—gear guards, belt shifter, etc.,—which make it still better. Strainer cover if desired.

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THE ABBOTT BALL COMPANY
Elmwood District, Hartford, Conn.



Belt
Driven
\$20
and
\$24

Burke Bench Drills

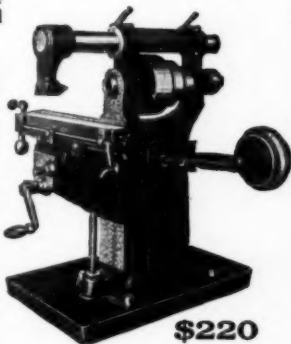
Excellent for production work. Also real time and money savers when placed at convenient points about the shop, such as the assembler's bench, in the tool room, and other strategic places. No handier tools made. Built both belt and motor drive, $\frac{3}{8}$ to 9/16 inch capacity.

Motor Driven, \$50 to \$55

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All top-notchers, built to close limits, well balanced, and accurate beyond criticism.

The No. 4 Machine shown here has longitudinal feed of 8 in., a traverse feed of 4 in. and a vertical feed of 8 in. Surface of table $3\frac{1}{2} \times 16$ in. Can be equipped with Index Centers, Vertical Milling Attachment, Slotting Attachment, Draw-in Chuck Attachment, and Vises (Plain or Swivel Base or Quick Acting). Very satisfactory on small milling operations. We build both power and hand feed machines at prices ranging from \$100 to \$220.



\$220

The Burke Machine Tool Co.
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For Sure Balance--

an absolutely level and solid "Way" is necessary

Bowsher "Balancing Ways"



are brought to an absolute *level* in ten seconds. No revolving parts.

The edges or "knives" upon which the work is tested are ground *true*, and are mounted upon the planed "ways" of a heavy bed or frame.

Standards adjustable to suit length of arbor.

Three sizes for floor—one for bench use

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Extremely sensitive. Discs accurately balanced. Always ready—need no adjustment—no leveling needed—no centers required. Last indefinitely. The hardened spindles hold their accuracy—don't become indented with ordinary use. Six sizes. Get the folder and close price.

"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards..	20"	30"	30"	66"	88"	20"
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight.....	45	90	150	350	650	
Code	Bend	Bld	Bis	Bib	Ben	

Any of above can be furnished with longer shafts

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Type C-1 Tool

**More
Economical
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Diamond**

You will produce work at
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using the

**“Precision” Roughing
and Semi-Finishing
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Not a substitute for the diamond, but built on
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**It will pay you to put Precision
Wheel Truing Tools to a test.**

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CINCINNATI, OHIO**

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**The Whitney Cylinder Grinder Will Make Money
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The grinding wheel travels in a true circle and grinds off only enough to make a hole that is round and straight. This machine does the work right and does it quick. That's why you can do a profitable business with a Whitney.

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**GRINDING
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ABSOLUTELY NEW
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Universal machines combine tool room accuracy with great versatility, rigidity and power for quantity production. Plain machines handle either straight or taper grinding with extreme accuracy. All machines are brand new, and are given thorough inspection and test under belt before shipping. A real bargain at the price.

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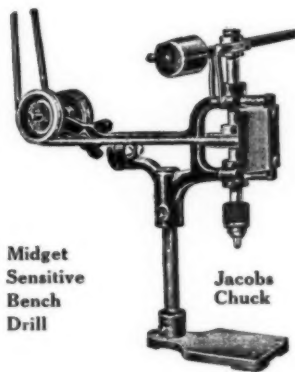
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We make a complete line of jewelry, and of course character.

The "Midget Sensitive" our smallest drills. may be used for a high, has 1 1/2" vertical to 3/16" drills.

Jacobs Chucks on No. 80 drill .63" in operation at high speed.

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Sensitive
Bench
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Fine u



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a complete line of drilling machines for the use of
and of course they are adapted to small work of any

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Fine work needs fine tools



PARKER



VICES



HANDLE "STAYS PUT"

Feature Place it in any position, release it and it stays there. Set screw and spring prevent its slipping down.

5



The Charles Parker Co., Master Vise Makers
Meriden, Conn., U. S. A.

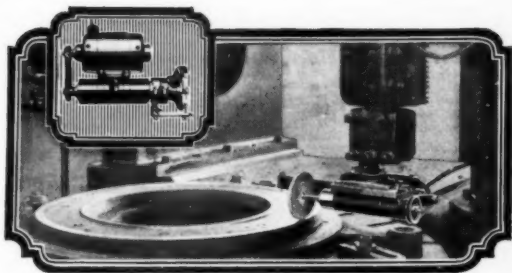


HITCHCOCK'S

The Blue Book

**Goes to the Heart of 96% of
the Best Plants in the Country**

The above statement is the result of careful mail inquiries directed to thousands of the larger tool-using concerns.



A Hard Job Well Done

THE illustration above shows a Dumore grinder in an unusual set-up on a milling machine, grinding a large ring-die. It is just another indication of the wide range of uses to which these precision tools may be applied. But could any greater tribute to the efficiency and adaptability of Dumore grinders possibly be given? What more convincing proof is needed of their ability to do hard jobs—and do them well?

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A copy of our new catalog is yours for the asking. So is complete information on Dumore special advantages and applications. Send for this instructive material today—tomorrow you may be too busy!

Wisconsin Electric Co., 43 Sixteenth St., Racine, Wis.

DUMORE HIGH SPEED GRINDERS

Plain, Surface, Edge, Die, Cutter

and

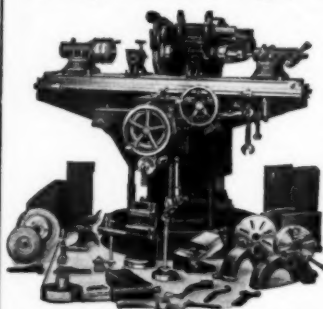
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on the 10" x 36"

Thompson Universal

Takes care of practically every grinding operation that may come up in your shop. The work adjusts to a fixed grinding wheel.

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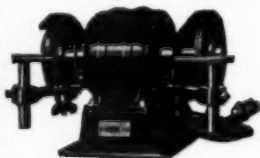


Manufactured By

THE THOMPSON GRINDER CO., - Springfield, Ohio

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Cuts Costs—Insures Sharp Tools



A specialized machine for one purpose. Insures sharper tools than any general purpose grinder.

Instead of one centrally located grinder, some plants have a "Bodine" in every department, saving time and eliminating every excuse for dull tools.

THE "BODINE" is as near mechanical perfection as is humanly possible. Equipped with Norma precision ball bearings, heavy wheel guards, tool rests adjustable to any position, an ideal oiling system, etc., etc. And the price is reasonable.

Full particulars will interest you; may we send them?

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PEERLESS SURFACING MACHINES

Will reduce grinding and finishing costs
and give you better work.

Can be substituted for many expensive
milling machine and planer operations.



Made also in vertical and bench models.

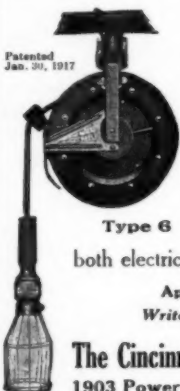
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TROY, N. Y.

In Canada: A. R. WILLIAMS MACHINERY CO., Toronto

Patented
Jan. 30, 1917



Type 6

both electric lamp and power extensions.

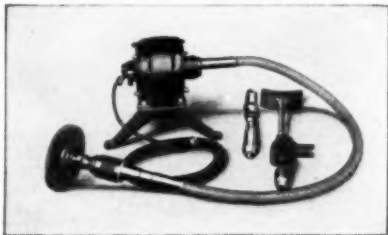
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The Cincinnati Specialty Mfg. Co., Inc.
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The Whirlwind Buffer and Grinder

**Will cut the cost on any unhandy
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The Best Since 1876

Grand Rapids Universal Grinder

MOTOR DRIVEN

With All Overhead Works Eliminated



GRAND RAPIDS No. 3 & No. 4 Universal Grinders
are furnished either hand feed or power feed,
wet or dry, motor drive or belt drive.

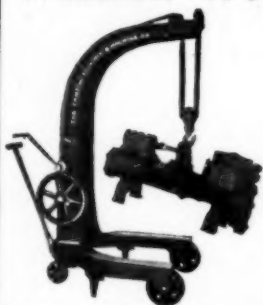
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GRAND RAPIDS, MICH.

Wanted—A Job



At heavy lifting and lugging. You pay for me only once, and I will hustle for you years and years without wages. For a comparatively small initial cost I will do the work of 6 to 10 men.

My name is "The Can-Ton Portable Crane and Hoist," known in all parts of the country as "The Handiest Tool in the Shop."

In case I appeal to you as a likely chap, just write my people for booklet E8.

Thank you—I know we'll be friends from now on

Canton Foundry and Machine Co.
Canton, Ohio

New York Office: 203 East 15th Street, Second Floor

Tools and Patterns

By Albert A. Dowd, Consulting Engineer

A survey of materials, tools and fundamental processes of pattern making.

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and Blanking Dies.
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Produced by
R-S Experts

This modern tool makes good in every shop that gives it a try-out. It's the ripe product of careful and exhaustive experimenting by our corps of experts, and we recommend it to all users as being on a par with the now famous R-S (Boehm) Automatic Die Head.



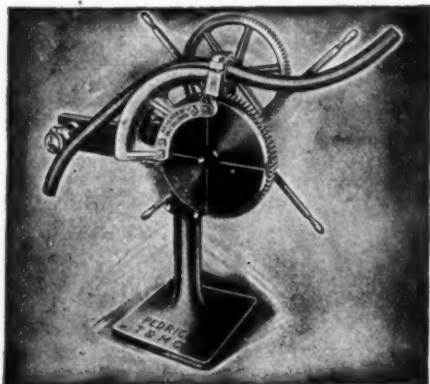
A collapsing tap is more efficient than the solid kind, and the R-S is *positive* in action, so that it *cannot fail*. You can withdraw the chasers at any time because its action does not depend on springs or similar contrivances. The capacity is for 1 in. and up.

Write for Circular giving full details and interesting information

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Our Pipe Benders Meet The Demand



Ever since their invention our hand Pipe Benders have had a steady sale and have given universal satisfaction.

Recently, we have made some improved attachments that permit of a wider range of work and open up a new field in the kind of bending the machine will accomplish.

If you do pipe bending you will find our machine an economical, simple and very efficient appliance in reducing costs and doing better work. For 2" and under.

We have a Bulletin waiting for you. Send for it now.

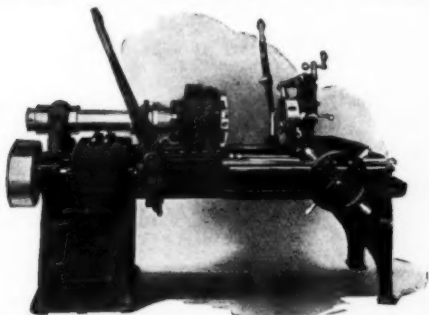
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3644 N. Lawrence St., Philadelphia, Pa.

Manufacturers of Cylinder Boring Bars, Portable Millers, Crank Pin Turning Machines, etc.

A Big Run—Or an Odd Job?

B & Ks Save Money at All Times



No. 2 PD QC—Threading & Cutting Off—Cap. $\frac{1}{4}$ " to 2"—Belt Drive

THESE STANDARD pipe threading machines are the embodiment of greater convenience and top-notch efficiency. If you have a big job on hand, set the machine and go ahead—it will stand up to the most strenuous pace. If you have a number of small jobs you will find it easy to make changes—instant adjustments can be made to the 1000th of an inch without the use of tools.

B & Ks are made in 17 styles and sizes—we have a machine for your exact needs. They thread pipe from $\frac{1}{4}$ to 18 inches in diameter. We have eliminated all uncertainty or guess work in the selection of the proper speed for the threading of any size of pipe.

We invite you to write us about your work. Our experts will gladly advise you, and there will be no obligation

Bignall & Keeler Machine Works
Edwardsville, Illinois

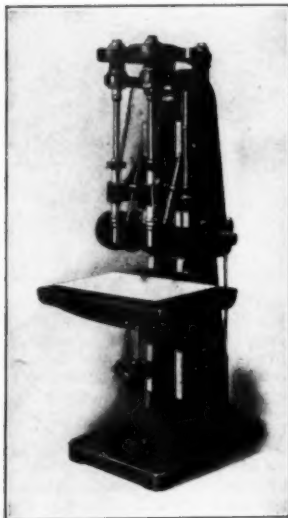
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A New Drilling Departure

The **VIKTOR**

With 1 to 8 Spindles



Our long experience is built into the new VIKTOR, and our enviable reputation stands behind the following claims:

More { Production
Speed changes
Feed changes

Less { Floor space
Upkeep expense
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Rugged construction
Enclosed fool-proof
mechanism
Direct motor drive

This new drilling machine, which is different—and more productive—and more economical, will fairly revolutionize your drilling operations. Pleased to tell you how and why.

The Henry & Wright Mfg. Co.
Hartford, Conn., U. S. A.

Second-Hand Machinery

Lists of Second-Hand Machinery, either For Sale, Wanted or For Exchange, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.50** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool Blue Book advertisers.

FOR SALE BY

Fitzsimmons & Cole Machinery Company

1206 House Building,

Pittsburgh, Pa.

Air compressor, 6x3 portable, m. d.
Air compressor, 10x12, 164 cu. ft.
Air compressor, 16x10x10 Blaisdell.
Angle bending rolls, 4"x4"x4".
Bending rolls, 12"x4" Kling, m. d.
Bolt cutters, 14", 2" & 24" Landis.
Borer, car wheel, 42" N. B. F.
Boring mill, 60" Betts, 2 hds., m. d.
Boring mills, 42", 52" & 62" King.
Brake, 10" Chicago, No. 12 gauge.
Cold saw, 18" Higley.
Coning machine, 24" L. & A.
Drill, radial, 4" Bickford, s.p.d., t.a.
Drill, radial, 5" Prentice.
Hammers, forging, 600 to 6000 lbs.

Lathe, 16"x6" South Bend, q. c. g.
Lathe, 50"x34" Pittsburgh, q. c. g., m. d.
Miller, univ., No. 2-B Milwaukee.
Pipe machines, 2" to 12".
Planers, 30" to 120".
Planer, rotary, 36" Cleveland, b. d.
Planer, rotary, 48" N. B. P., m. d.
Shaper, 16" Cincinnati, b. d.
Shaper, 24" G. & E., b. g.
Shear, No. 2 Lennox rotary bevel.
Shears, 10"x4" United plate shr., m. d.
Shear, 9"x8" Morgan plate.
Upsetter, 24" Ajax.
Upsetter, 5" National, b. d.
Upsetter, 5" Ajax, b. d.

FOR SALE BY

Brown Machinery Co.,

2323 N. 9th St., St. Louis, Mo.

Boring mill, No. 10 Beaman-S., hor.
Boring mill, 60" Sellers, 2 heads.
Boring mill, 42" Bullard.
Die sinker, No. 3 Jackson.
Drill, 24" Aurora, sl. hd., b. g., p. f.
Drill, 24" Cincinnati, sl. hd., b. g., p. f.
Drill, 26-spindle Baugh, No. 3.
Drill, 6 spindle Allen, b. b.
Drill, No. 1 Barnes hor. radial.
Drills, rad., 3" American & Mueller.
Gear cutter, 30" Whiton.
Gear hobber, No. 1 Farwell.
Gear shaper, Fellows 36".
Grinders, No. 6 & No. 14 Besly.
Grinders, 5x18 Ott; Norton.
Grinder, No. 12 Brown & Sharpe.
Hammer, Dupont, size D.
Lathes, 14", 16", 20", 26" Walcott,
d. b. g., q. c. g.
Lathe, 18"x10" LeBlond.
Lathe, 17"x 6" Cincinnati, semi q. c.
Lathe, 20"x8" Reed.
Lathe, 26"x14" Hamilton.
Miller, 1-B Fox horizontal.
Miller, No. 4 Hendey, b. g.

Miller, No. 2 Becker.
Miller, No. 5B Becker-B.
Miller, 8", 12" P. & W., auto.
Planer, 30"x30"x8" Pease.
Planer, 54"x54"x12" Pond.
Presses, L. & J. Nos. 1, 2, 3.
Press, arch, No. 42 Swaine.
Press, toggle, Robinson 10".
Profilers, two-spindle, Pratt & Whitney, Putnam, Reed-Prentice.
Punch, No. 39 Beloit, cap 4" in 4".
Punch, Ryerson-Kling rapid action, 18" throat, 4" in 4".
Punch & shears, single end, No. 4 Bremer, 4" in 4", 12" throat.
Punch & shear, No. 5 Long & Allstatter, 4" in 4", 4" tht., dbl. end.
Roll, plate straightening, No. 0 Hilles & Jones.
Shears, 134 Marshalltown rotary, 4".
Shears, No. 260 Peerless 60", 14 ga.
Shear, No. 13 Pettin, rotary, 14 ga.
Stake riveter & punch, No. 3 Hilles & Jones, 5" throat.

Many other bargains. Write for Stock List No. 120.

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FOR SALE BY

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BOLT CUTTERS AND PIPE MACHINES.

- 1" Acme, style B, with dies, 75%.
- 4" Acme, single head, complete with equipment of dies and lead screws, 75%.
- 2" Jarecki, dies and countershaft, 70%.
- 4" Jarecki No. 44, with dies and c. s., pipe turns, die stationary, 85%.
- 8" Jarecki No. 88, with dies and c. s., pipe turns, die stationary, 85%.

BORING MILLS—VERTICAL.

- 42" Bullard rapid production, rapid traverse, 85%.
- 44" Niles, double swivel head, single pulley drive, 90%.
- 2-60" Bullard, 2-head, standard, 60%.
- 60" Colburn, 2-head, standard, 85%.

BORING MILLS—HORIZONTAL.

- 24" bar Rochester floor boring mill, vertical, motor drive, 80%.
- No. 5 Beaman & Smith, post type, 8" bar, mtr. dr., floor plate, plate 19'x17'.

BULLDOZERS.

- No. 3 Williams & White, crosshead 7x39", stroke 16", 90%.
- No. 24 Williams & White, steel bed.

CRANES AND HOISTS.

- 2-ton Euclid electric hoist, d. c. | 50-ton Cleveland, 10-ton auxiliary
- Air hoist, cylinder 6x50", 90%. | crane, 80' span, 220 d. c., 90%.

DRAW BENCHES.

- 15,000 lbs. to 25,000 lbs. Waterbury-Farrel, United Engineering and Stand-
- ard; 20' draw, with 18' extensions for mandrels, heavy cast iron; 80%.

DRILLS—MULTI-SPINDLE.

- 4 spindle 20" Barnes, cone drive, 85%.
- 4 spindle No. 2 Colburn, arranged for motor drive, 90%.
- 4 spdl. No. 4 Colburn, arr. for motor dr., all grd., cap. about 2" in steel, 90%.

DRILLS—RADIAL.

- No. 3, 10' Cleveland Punch & Shear wall radial; total height of back column
- 15'6", total travel of carriage on rail 11', length of overarm 12'6", 70%.
- No. 1, 8' wall radials; length of horizontal arm 9'6", horizontal travel 5'4",
- vertical travel 5'6", length of feed 8", belt drive, 70%. (6).
- 4' Cincinnati-Bickford radials, used very little, (2).
- 4' Prentice radials; old machines, in good operating condition, purchased
- second hand, (2).

DRILLS—UPRIGHT.

- 20" Mechanics drills, made by Rockford, camel back type, good condition, (2).
- 20" same as above.
- 24" Rockford, as above.
- 24" Kokomo hi-speed, sliding head, late model, 75%.
- 30" Aurora, sliding head, geared feed, fair condition.
- 32" Cincinnati, with tapping attachment, 75%.
- 24" No. 25, Foote-Burt pl. drill, with compound table, in good condition.
- 24" No. 25 Foote-Burt high duty drills, 90%, (5).

HYDRAULIC EQUIPMENT AND PRESSES

- Hydraulic accumulator, 14"x16", Birdsboro Steel Foundry.
- Wilson-Snyder horizontal hydraulic, motor driven Hi-pressure Pump; cylin-
- ders 34"x24", 2400 lbs.; driven by 300 h. p. 2200 volt Allis Chalmers motor,
- with spare gears- barely used, in excellent condition. Made by Birdsboro
- Steel Foundry.
- 125-ton hydraulic press; ram 12", stroke 27", die space R to L 23", F to B 26",
- columns 6".
- 500-ton hydraulic press; ram 24", stroke 60", die space R to L 284", F to B
- 284", columns 74".
- 1000-ton hydraulic press; ram 32", stroke 60", die space R to L 40", F to B
- 48", columns 94".
- 80-ton hydraulic press; ram 94", stroke 65", die space R to L 24", F to B 36",
- columns 34".
- Same as above, top platen broken, two columns broken, other two bent.
- 50-ton hyd. press; ram 44", stroke 12", center of ram to back 104", open sides.
- 1800-ton Kilby hydraulic press; width 34", length 17', 6 pressure cylinders,
- 12 posts, 6" diameter.

(Continued on next three pages)

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued

ELECTRICAL EQUIPMENT AND MOTORS.

No. 9—200 k. w. General Electric generator set, 2300 volt, 60 cycle, 3 phase, to 275 d. c.

D. C. MOTORS.

Amount	Type	Form	H. P.	R. P. M.	Make	Volts
1	SM		1	900	Crocker-Wheeler	220
1	RC 27 A	A 38	3	1100	General Electric	230
1	S		4	1280	Westinghouse	500
1	SK		5	600 to 1800	Westinghouse	230
3	RF 10 A	A 17	7½	450 to 1350	General Electric	230
1	CCM		5	960	Crocker-Wheeler	220
1			6½	1225	Crocker-Wheeler	230
1	S		7	1050	Westinghouse	500
1	GM		24	700 to 1400	Crocker-Wheeler	230

A. C. MOTORS.

Amount	Type	Frame	H. P.	R. P. M.	Make
1			1	90	Reliance Electric
1			1		Dumore
1			1	1725	Western Electric
1			2	1800	Fairbanks Morse
7	KT	731	3	1200	General Electric
2			3	1200	Lincoln
1	OS		3	1730	Western Electric
1	K 1	16	3	1200	Western Electric
1	KT		3	1800	General Electric
1	OS		3	1130	Westinghouse
1	OS		3	1730	Westinghouse
5	KT	731	5	1200	General Electric
4	KT	732	5	1200	General Electric
1	KT	181	5	900	General Electric
1	Mill MS		5	840	Westinghouse
1	Mill MS		5	840	General Electric
3	KT	751	7½	1200	General Electric
1	KT	181	7½	1200	General Electric
1	KT	751	10	1800	General Electric
2	KT	752	10	1200	General Electric
1	MT	322	15	900	General Electric
1			15	1800	Lincoln
2	KT	326	20	900	General Electric
1	KT	322	20	1200	General Electric
1	KT	726	25	900	General Electric
1	KT	336	30	900	General Electric
1	MT	346	40	720	General Electric
1	KT	342	40	900	General Electric
1	I	Form K	35	900	Gen. Elec., 2200 v.

TRANSFORMERS.

3	General Electric	50 kva	type S	2200-220-110	2300-230-115	2400-240-120.
3	General Electric	25 kva	type S	2200-220-110	2300-230-115	2400-240-120.
2	General Electric	20 kw	type N	Class 400-16000	Alternations Style 10235.	
2	General Electric	15 kva	type H	Form K	Cycle 60 volts, 2200-1900-110-220.	
3	General Electric	667 kva			23000-23000	
2	Adams-Bagnall	40 kva	60 cycle,	440-220-110, serial No. 45304 & 45304-544.		
1	Adams-Bagnall	5 kva	60 cycle,	460-230-110, serial No. 41029.		

FORGING MACHINES

1" Ajax bolt heading and forging machines, 75%, (3).
 3½" Ajax iron body forging machine, 85%.
 250-ton Mesta steam hydraulic forging machine, 85%.

GRINDERS.

No. 3	Brown & Sharpe	univ., 70%.	No. 4	Gardner	motor driven disc grinder, with discs, cup, wheel and press; 10 h. p. motor, 1200 r. p. m., 220 volt, 60 cycle, 3 phase, a. c.
10x36"	Modern	univ., and parts, 70%.			Yankee drill grinder.
72"	Diamond	surface grinder, 85%.			
No. 75	Heald	internal, with extra spindles and c/s, 85%.			
Washburn	drill	grinder, 70%.			

(Continued on next two pages)

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., 1738 St. Clair Ave., N. E., Cleveland, O.

(Continued from Preceding Page)

HAMMERS.

600 lb. Merrill board drop, 95%.
850 lb. Bell steam forging, 85%.
No. 8 Beaudry, power, arranged for motor drive, 80%.

No. 6 Nazel air hammer; frame cracked but patched in workmanlike manner and in good operating cond., arranged for motor drive.

LATHES.

12"x 6' South Bend, with 1 chuck fitted, 90%.
16"x 6' Hendey, pan bed, 85%.
16"x 8' Lodge & Shipley.
16"x 9' Lehmann.
16"x 9' Chard with 2 chucks fitted.
18"x 8' Lodge & Shipley, standard cone head, with countershaft, quick change gears, with chuck, 70%, (4).
18"x 10' American, cone, double back geared, 80%.
19"x 8' LeBlond heavy duty, friction head, quick change gears.
24"x 12' Reed, belt feed, loose change gears.
26"x 14' Bridgeford geared head; with 9 speeds in head and variable speed motor drive, with motor, taper attachment, chuck and parts. A multiple speed a. c. motor can be used in place of d. c. if desired, 90%.
30"x 16' Prentice geared head, motor driven, 90%.
32"x 18' Schumacher, cone head, qck. chg. gears, chuck and countershaft, 60%.
48"x 20' Schumacher-Boye, triple geared, cone drive, 80%.
48"x 26' Bridgeford geared head; 9 speeds in head, quick change gears with variable speed d. c. motor. Multiple speed a. c. motor can be substituted. Machine has taper attachment.

MILLING MACHINES.

Style "B" Gooley & Edlund, Briggs, Lincoln type, mfg. gear fd., 80%, (2).
30"x 17"x 18' Oesterlein plain, 50%.
No. 0 Steptoe plain univ. heads, 90%.
No. 0 Rockford, power feed, arbor, vise, new.
No. 1 Rockford pl. bk. geared, 90%.
No. 2 Cleveland full univ., single pulley drive, with heads, braces, vise and arbor, 85%.

No. 2 Brown & Sharpe vertical, 50%.
No. 2-A Brown & Sharpe univ., 75%.
No. 3 Brown & S. pl., cone dr., 65%.
No. 3-B B. & S. hvy. sgl. pulley dr.
No. 5 Becker vertical, old style, no countershaft, 60%.
No. 13 Brown & S., Lincoln type.
30"x 10' Newton Slab Miller, arranged for motor drive.

PLANERS.

22"x 24"x 57' Fitchburg.
24"x 24"x 6' Liberty, 1 head, new.
30"x 30"x 8' Gray, single head, 80%.
30"x 30"x 8' Gray, single head, 70%.
48"x 48"x 16' Gray, 4 hds., mtr. dr., 95%.

36"x 36"x 12' Bickett, 3 heads, with d. c. and variable speed reversing motor 90%.
60"x 48"x 16' Pond, 2 hds., old style, light pattern, fair condition.

PRESSES AND BRAKES

59½" Toledo straight side, single crank, tie rod frame, bolster 40"x 40", stroke 8", friction clutch, belt motor drive.
DP-56 Ferracute straight side or trimming press; geared, arranged for side shear which has been removed and could be replaced. Stroke 5", die space 18½", weight about 15,000 lbs.
No. 6 Niagara, broken frame, 3" stroke, 9½" die space; frame has been welded; arranged for motor drive.
Double crank Niagara, light, 5" stroke, 9" die space, 48" between housing.
10' Ohl bending brake, plunger type, for 16 gauge material, good condition.
8' 6" Ohl power brake, 85%.

PUNCHES AND SHEARS.

No. 2 Hilles & Jones horiz. punch; 8" throat, cap. 4"x 1", belt drive, 70%.
42" gap American ship punch, capacity 1"x 1", 70%.
54" gap American ship punch, capacity 1"x 1", 70%.
60" Stoll geared shear, capacity about 1".

SLOTTERS.

12" Sellers, 75%.
10" Newton, with countershaft, 75%.
16"-18" Dill; adjusting ram, arranged for motor drive.

(Continued on next page)

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued

RIVETERS.

Hanna I-beam frame; 18" reach, 12" gap, 10 $\frac{1}{2}$ " cylinder, exerting 30 tons pressure on dies at 100 lbs. air pressure; good for $\frac{1}{2}$ " steam type or $\frac{1}{4}$ " structural type rivets.

Allen box frame type air riveter; 24" reach, 15" gap, 10 $\frac{1}{2}$ " cylinder, giving 30 tons pressure; good for $\frac{1}{4}$ " structural or $\frac{1}{2}$ " steam type rivets.

SAWS.

No. 3 Ajax hot saw and burring machine, complete, 80%.

36" Klemm metal band saw, 75%.

6" Racine Jr. hack saw, new.

6" used Racine hack saw, 75%.

6" used Racine hack saw, 75%.

6" used Racine hack saw, 85%.

6" used Racine hack saw, 85%.

SHAPERS.

21" Averbeck, no countershaft, 75%.

24" Cincinnati, arranged for motor drive, no countershaft, 75%.

24" Walcott, crank, back geared, 90%.

TINNERS' TOOLS.

48" tin rolls, power driven, 90%.

39" Crimper.

30" Squaring shear.

48" Folder.

TURRET LATHES AND SCREW MACHINES.

No. 4 Bardous & Oliver power feed, back geared, 50%.

2" x 24" Warner & Swasey, hollow hexagon, gear feed, pump, tools, etc., 60%.

24" x 26" Acme flat turret lathe, complete with 4-speed a. c. motor and tooling.

3" x 36" Jones & Lamson, flat, friction fd., ck. and bar fd., bar equipment, 85%.

21" Gisholt, standard model, 70%.

24" Gisholt, late model, 85%.

WOODWORKING TOOLS.

Band saw, 36" Fay & Egan, with tilting table.

Emery wheel, No. 3.

Pattern lathe, Fay & Egan 12".

Planer, Fay & Egan, pony.

Post drill, 15" Silver.

Ripsaw, Fay & Egan.

MISCELLANEOUS.

Centering machine, 3" Whiton, 75%.

Face plate jaws for vertical boring mill, (4).

Gas engine, 5 h. p. Economy.

Gear cutter, 36" Gould & Eberhardt.

Magnetic chucks, (2).

FURNACES.

Oil hardening furnace; inside, F to B 24", R to L 20", height center 12"; door, R to L 18", height center 12".

Oil hardening furnace; inside, F to B 30", R to L 23", height center 13"; door, R to L 18", height center 14".

Oil hardening furnace; inside, F to B 46", R to L 40", height center 18"; door, R to L 32", height center 14".

WELDERS.

Toledo spot welder, now arranged for 15" tap, 120 k. w., 60 cycle, 3 phase, for 10 gauge, 75%.

150 amp. Lincoln electric welder.

Federal welder, 220 volt. 60 cycle, 12 $\frac{1}{2}$ k. w., No. 124, 80%.

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

BOILER EQUIPMENT.

Long & A. No. 0 angle shear, 4x4x $\frac{1}{2}$.

Felber combination punch & slitting shear, 1" in 1".

Scully hvy. punch, 1" in 1", thrt. 20".

H. & J. No. 0 punch, $\frac{1}{4}$ " in $\frac{1}{4}$ ", 14" thrt.

Badger punch, 36" throat, $\frac{1}{4}$ " in $\frac{1}{4}$ ".

Miscellaneous equipment, screw punches, taps, flues, hoists, etc.

MISCELLANEOUS.

Brakes, 6' 8', & 10' hand.

Lathes, 40—9" to 24" South Bend;

26" x 14" Hamilton, q. c. g.

Milling mchs., Milwaukee No. 1B,

Hendey No. 2 universal, American

No. 1 $\frac{1}{2}$ univ.; Becker model SD

vert., rotary table, wt. 16,000 lbs.;

20 plain millers; Cinti. No. 3 univ.

Planers, 36" x 36" x 23" Sellers, 2 hds.;

42" x 42" x 16" Pond, 2 heads.

Presses, No. 2 Rockford and Consol-

idated, No. 19 Bliss, No. 30 Toledo

Screw mchs., B. & S. No. 60, Foster

No. 3 hand, 2 Woods No. 2 tilt. tur.

Shapers, new 12", 14", 16" & 20";

36" Fellows, gear; used 16" & 24";

Sheet metal tools, Voder and Pexto.

Slitting shear, No. 10 Quickwork.

Tire press, 260 ton hydraulic.

Welders, butt and spot.

SECOND-HAND MACHINERY

FOR SALE BY

W. P. Little Co.,

West 9th & Front Sts., Cleveland, Ohio

BOLT CUTTERS.

2" Foote-Burt.

BORING MACHINES.

30" Colburn vertical.

2 1/2" National.

No. 3 Marvel cylinder.

LATHES.

13"x 6' Willard, c. r.

14"x 8' LeBlond, q. c. g., c. r.

16"x 6' LeBlond, q. c. g., c. r.

16"x 6' Bradford, q. c. g., & t. a.

18"x 8' Porter, d. b. g.

26"x 9" Bridgeford, q. c. g., & d. b. g.

MILLING MACHINES.

No. 0 Kempsmith universal.

18" Cincinnati b. g.

No. 15 Brainard.

No. 1 Kempsmith pl., with div. hd.

No. 2 Cincinnati pl., with div. hd.

No. 6 Whitney hand.

PUNCH PRESSES.

No. 2 Bliss Stiles pattern.

No. 21 Bliss.

No. 14 1/2 Williams & White.

S. G. 55 Ferracute double crank.

No. 24 Cleveland horning.

No. 87 Zeh & Hahnemann.

No. 4 Niagara gang punch.

Z. & H. double acting cam drawing.

30" geared, arch.

GRINDERS.

No. 6 Bryant internal.

No. 75 Heald internal.

No. 3 Modern universal.

No. 6 Rivett internal.

RADIAL TAPPING MACHINE.

1/2" Rickert & Shafer radial tapping machine, motor driven.

SPINNING LATHES.

22" Prybil.

28" Prybil.

MISCELLANEOUS.

Hammer, 50 lb. Bradley upright.

Hammer, 250 lb. Morgan steam.

Keyseater, No. 0 Mitts & Merrill.

Slotter, 8", rotary table.

Spline miller, 1/2" Pratt & Whitney.

Turret, No. 2 Bardons & Oliver.

FOR SALE BY

B. L. Saltzman,

524-526 W. Van Buren St., Chicago

MOTORS.

New 1/2 h. p., 1 phase, a. c., 110 volt.....\$10.00.

New 1/2 h. p., 1 phase, rep. ind., 110/220 volt.....32.50.

New 1 h. p., 1 phase, rep. ind., 110/220 volt.....50.00.

New 1 h. p., 3 phase, 60 cycle.....40.00.

All of the above, factory guaranteed for one year.

We also have a variety of other types, new and used, from 1/4 h. p. to 200 h. p., a. c. and d. c.

LATHES.

20"x 8' LeBlond.

18"x 8' Flather.

14"x 6' Sebastian.

14"x 6' American.

14"x 6' LeBlond.

2x26 Pratt & Whitney, late model turret lathes, (2).

DRILL PRESSES.

20" Milwaukee.

20" Champion.

3 spindle Sigourney.

PUNCH PRESSES.

No. 4 Loshbough-Jordan, o. b. i., (2).

MISCELLANEOUS.

Bolt threader, Wells, single and double head.

Boring mill, 30" Colburn.

Grinder, disc, No. 8 Besly 20".

Miller, No. 1 Kempsmith plain.

Miller, No. 23 Fox plain.

Miller, No. 14 Kempsmith universal.

Screw machine, No. 2 Foster.

Screw machine, 3"x1 1/2" Brown & Sharpe automatic.

We have for sale a large line of woodworking and ironworking machinery. Write us today for what you need. Also complete line of belting, pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

- 12"x66" Fitchburg Lo-Swing.
14"x 6' Hamilton.
14"x 6' Prentice Bros., s. b. g., l. c. g., with t. a., with 8" 4-jaw ind. ck.
15"x 6' South Bend, c. r. complete.
16"x 6' South Bend, c. r. complete.
18"x 8' Prentice c. r., l. c. g., chuck.
14"x 6' Reed, r. & f. rest.
- 18"x10' Star, 4-s. c., a. g., with 16" 4-jaw ind. chuck.
14" Reed production lathes, with dbl. cut-off slide and carriage, (7).
14"x6' Hendey q. c. g., c. r. and t. a. with draw-in attach. and collets.
14"x6' Monarch, c. r., standard.
14"x8' Monarch, c. r., stand. pattern.

TURRET LATHES AND SCREW MACHINES.

- No. 1 Warner & S., p. h., a. c. and b. f.
No. 2-A W. & S. g. h. tur. lathes, (3).
No. 3-A W. & S. g. h. turret lathe.
No. 3, 1 1/2" Wood tilted turret.
14" Acme screw mche., p. f. to tur.
25" Gisholt heavy duty turret lathe.
17"x24" Jones & L. g. h. flat turret.
- No. 00 Brown & Sharpe auto.
No. 0 Brown & Sharpe auto. (3).
No. 2 Brown & Sharpe auto. (2).
No. 2 Warner & S. p. h. screw mchs., a. c. & b. f., p. f. to turret. (3).
1" Biggs, p. h., a. c. & b. f.
No. 4 W. & S., p. h., a. c. & b. f.

DRILLING MACHINES.

- 20" W. F. & John Barnes, stationary head, b. g. and p. f. (2).
Henry & W. sgl. sp., h. s., b. b., ck.
No. 1 Minster high speed heavy duty, with pump.
25" Superior, sliding hd., b. g., p. f., with tapping attachment.
21" Superior, sliding hd., b. g., p. f., with tapping attachment.
4-spindle Leland-Gifford, h. s., b. b., with p. f. to each spindle.
- 24" Baker heavy duty.
6' arm Western radial, with tap. att., arranged for motor drive.
20" W. F. & John Barnes, stationary head, p. l. f., (2).
21" Superior, stationary hd., p. l. f.
20" Superior, stationary hd., p. l. f.
5' arm American triple geared radial with speed box, s. p. d., with t. a. and box table.
4' arm Hammond h. s. radial.

MILLING MACHINES.

- No. 7 Becker plain.
No. 26 Becker pl., without bk. grs., with power fd., pump and tank.
No. 14 Rockford plain, with div. hd.
No. 24 Ohio plain b. g. complete.
- No. 1-V Brown & Sharpe plain.
No. 22 Garvin, vertical spindle.
Potter & Johnston dbl. table automatic production miller.

GRINDERS.

- No. 10 Cochrane-Bly auto. bench saw filing machine.
No. 1 Brown & Sharpe, univ.
Type "DE" Hisey-Wolf internal.
No. 14-16 Besly, wet ring wheel.
- No. 11 B. & S. plain grinders, (2).
American drill grinder.
Type WTA Cincinnati.
Plain emery wh'l stand with column.
No. 1 W. & M. univ. cutter & reamer.

SHAPERS AND PLANERS.

- 22"x22"x 5' Putnam planers (2).
42"x48"x10' Sellers planer.
- 36"x36"x12' W. & P., two rail heads.

METAL CUTTING TOOLS & SQUARING SHEARS.

- Higley cold saw.
3" new Davis cutting-off machine.
36" Niagara foot power squ. shear.
- 30" Niagara foot power squar. shear.
No. 152, 52" Robinson power squaring shear, 16 gauge capacity.

GEAR CUTTERS AND HOBBER.

- 26" & 36" No. 3 Brown & S. auto.
No. 13 Brown & Sharpe auto.
- No. 12 Barber-Colman hobbers.

HAMMERS.

- Coffman post pwr. dr. hammer, 25 lbs.
Cady belt drop hammer, 100 lbs.
- Quickwork body hammer.

MISCELLANEOUS.

- Bench tapper, Montgomery, 1/2" cap.
Bench tapper, Hubbell, 1/2" cap.
Bolt cutter, 2" Morgan.
Broach, No. 2 J. N. Lapointe, with set broaches and guides, 1/2" to 1/4" keyway.
Broaching machine, Lapointe No. 14.
- Pipe mche., No. 1, 1/2" to 2" Williams.
Pipe mche., No. 3, 1" to 6" Williams.
Pipe machine, Oster, cap. 1" to 4", with full set r. & l. chasers.
Polishing lathes, City Machine Co.
Polishing lathe, Hammond, h. s., b. b.
Pulley lathe, Streit.

SECOND-HAND MACHINERY

FOR SALE BY

Sherrod S. Macintosh & Co., 408 Frankfort Ave., Cleveland, O.

Boring mill, No. 32 Lucas, 80%.
Drill, 12" Allen b. b., 22x26" table.
Grinder, No. 11 Brown & Sharpe,
self-contained.
Grinder, No. 6 Bryant internal.
Lathe, 13"x5' So. Bend, complete.

Lathe, 14"x6' American, q. c., taper.
Miller, No. 2 B. & S. universal.
Screw machine, No. 4 Foster, good.
Screw machines, No. 24 New Britain
automatic, (2).
Shaper, 16" Ohio, b. g., 90%.

Random selections as samples. Many other tools.

FOR SALE BY

Niles-Bement-Pond Company, 111 Broadway, New York
Located at our various factories

LATHES.

12"x 5' Reed, taper.
14"x 8' P. & W., taper.
16"x 6' L. & S., cone head.
24"x24' Niles.
26"x10' Pond, 220 volt, d. c. motor.
28"x12' Pond.
36"x12' Pond, t. g., 220 v., d. c. mtr.

36"x17' Pond, taper, 220 v., d. c. mtr.
42"x20' Niles, t. g.
45"x28' Niles, t. g.
50"x17' Miles, old style.
54"x28' American, t. g., 220 volt, d. c.
motor.

TURRET LATHES.

1", 2", 24" and 3" P. & W.
2"x24" W. & S. hollow hex.
21" and 28" Pond rigid turrets.

28" & 34" Gisholts.
32" Conradson-American turret.

PLANERS.

20"x20"x 6' Bement.
24"x24"x 6' Powell.
24"x24"x 6', 8' and 10' Whitcomb-B.
26"x28"x 6' Gray.
30"x30"x 6' & 10' Pond, 2 heads.
30"x30"x 6' to 12' Pond, reversing
motors.
36"x36"x16' to 16' Niles.
36"x36"x12' to 16' Pond, reversing
motors.
42"x42"x14' Bement.

42"x42"x26' Pond, reversing motor.
48"x48"x16' Pond, reversing motor.
48"x48"x20' Bement, belt.
84"x36"x10' Bement, belt.
50"x36"x22' Pond, reversing motor.
54"x54"x22' Pond, rev. motor.
60"x60"x20' & 24' Niles, belt.
72"x72"x12' Bement, belt.
72"x60"x14' Bement, reversing mtr.
10'x10'x36' Betts, 220 volt, d. c. motor
through belts.

MILLERS AND GEAR CUTTERS.

No. 3-B plain, 220 v., d. c. motor,
Brown & Sharpe.
No. 4 plain, cone pulley, B. & S.
No. 5 plain, cone pulley, B. & S.
No. 4-46" Newark, 220 v., d. c. mtr.

6x48 to 132" P. & W. old style thread
millers.

15" Gleason bevel gear generator.
No. 5 vertical, cone pulley, B. & S.
36" to 60" B. & S. spur gear cutters.

DRILLING MACHINES.

32" Aurora, tapping attachment.
40" Aurora, tapping attachment.
34" Morris speed box radial.
5' Niles full universal, speed box.

6' Pond, 220 volt, d. c. motor.
6' Niles full universal, speed box.
12-spindle No. 13 P. & W. multiple.
3 spindle 23" Barnes gang.

BORING MACHINES.

36-44" Niles side hd. mill, 220 v., d. c.
51" Niles mill, with turret head.
60" Bement b. & t. mill.

44, 5 and 64" Niles floor borers.
24 to 48" horizontal boring and drill-
ing machines.

MISCELLANEOUS.

Air compressors, 324' and 835', steam
drive.
Crane, 3-ton, 19' span, Niles 3-motor,
220 volt, d. c.
Engines, 125, 150 and 200 h. p. Phil-
adelphia Corliss.
Generator set, 100 k. w., 22 volt, d. c.,
direct connected to engine.

Heater, 600 h.p. Cochrane, fd. water.
Grinder, Mummert-Dixon portable
radial, 220 volt d. c. motor.
Grinder, No. 6 Bryant hole gr.
Grinder, P. & W. thread miller cutter.
Pumps, 200 to 1000 gal., steam drive.
Slotter, 18" Putnam, 220 volt, d. c.
motor.

SECOND-HAND MACHINERY

FOR SALE BY

Russell Machine Co., 28th St. & A. V. R. R., Pittsburgh, Pa.
LATHES.

50"x49'6" Johnson, triple geared.
46"x17' New Haven, triple geared.
30"x13' New Haven.
28"x14' Putnam, h. s.
26"x12' Pittsburgh, dbl. b. g.
26"x20' 6" Putnam, b. g., c. r.
26"x10' 6" Walcott, q. c. g.
24"x16' 6" Johnson lathe.
20"x10' Monarch, h. s., c. r.
19"x10' LeBlond, motor drive.
19"x 8' Bullard, c. r., b. g.
18"x 8' Mueller, q. c. g.

18"x 8' Sidney, q. c. g., d. b. g.
16"x 6' Blaisdell, h. s.
16"x 6' Cleveland, q. c. g., new.
16"x 6' South Bend, h. s., t. a.
15"x 8' Schellenbach, d. b. g., h. s.
16"x 5' Fox turret with chasing bar.
3"x36" J. & L. flat turret.
24"x24" J. & L. flat turret.
24"x 6' Gisholt tur., 64" h.s., m.d.
1"x 7" Acme screw machine.
10"x 4' Blount speed lathe.
12"x48" speed lathe.

PLANERS AND SHAPERS.

24"x24"x 8' Chandler planer.
30"x30"x12' Detrick-H. openside.
32"x32"x 8' New Haven, 1 head.
48"x48"x16' 2" Cleveland open side planer, 1 side & 2 rail heads.

48"x48"x22' Pond planer, 4 heads.
120"x120"x25' Sellers planer, 4 heads.
16" G. & E., 20" Columbia shapers.
24" Kelly b. g. cr. shaper.
24" Queen City, b. g. cr. shaper, m.d.

DRILLS AND BORING MILLS.

14" U. S. sensitive floor drill.
20" Champion, new, pl. w. & l.
36" Prentice, sliding head.
40" New Haven, b. g. drill.
4' Dreses, 4' Bickford radial.
64' & 8' Pond radial drills.
24' Canedy-Otto post radial.
1" Champion post drill.
30" W. & S. boring mill.
36" Bridgeport boring mill.

42" & 50" Bullard bor. m., 2 heads.
42" Bullard New Era boring mill.
36", 51", 90", 10' Niles bor. mills.
84" Pond boring mill.
Beaman-Smith No. 5 post type hor. boring & drilling machine, spindle 8" dia., floor plate 12"x16".
Beaman & Smith post type hor. boring mill, 34" bar, m. d.

PUNCHES, SHEARS, PRESSES AND ROLLS.

King Bridge Co. s. e. punch, 30" thr.
50" throat Reade sgl. end punch and shear; massive construction.
L. & A. punch & sha. Nos. 6, 7.
Mahoning punch & shear, 32" thr.
Plunger type punch & shear, 9" thr., six 1/2" holes thru 1/2" plate and 6x1/2" at one operation.
Danville portable alligator shear 14" capacity.
Carlin alligator shear, 11" capacity.
Carlin alligator shear, 24", m. d.
Canton alligator shear, 3", m. d.
Garrison plate shear, cap. 1/2"x81", m. d.

Waterbury-Farrel rotary sh., 14" thr.
Hilles & Jones gate shear, capacity 84x1/2", motor drive.
Pusey-Jones guillotine shear, 3" cap.
Niagara pr. sq. shears., 36".
Cleveland sq. shear, 120"x3/16".
No. 56 dbl. housing knuckle press.
Double acting drawing press, 34" stroke.
Stiles No. 3 inclinable press.
Baird No. 1 foot power presses.
Baird Nos. 3 & 1 open back presses.
Z. & H. inc. press.
Straight-side punch press, 1/2" str.

MISCELLANEOUS.

Air compressors: Chicago 19x12x14; Chicago 9"x11".
Blowers, Buffalo No. 8 vol.; Sturtevant No. 8.
Bulldozer, W.-W. No. 2.
Cold saw, Wagner, size 18 type 3.
Cranes, portable 2 ton.
Engine, gas, 15 h. p. Fenner.
Forge, No. 41 Champion new.
Gear cutters, No. 13 B. & S.
Gear hobber, 160"x33", for high speed gears; will cut spur, worm and spiral gears; m. d.
Grinder, Ott 6"x6" internal.
Grinder, Ott 5"x18" plain.
Grinder, Landis No. 3 universal.
Grinders, Plymouth Nos. 17, 20.
Hammers: 1500 lb. Bement st. dr.; 800, 2000 lb. B-M st. forging.

Hammers, 25, 60 & 80 lb. Bradley.
Hammer, W. & W. 55 lb. upright.
Millers: Milwaukee 2-B universal, Cincinnati No. 2 high duty universal; Cincinnati No. 3-S. univ.; Hendey-Norton No. 3 universal; B. & S. No. 2-B, Cincinnati No. 3, and Garvin No. 12 plain; Briggs high duty production; Cincinnati No. 2 vertical.
Motors, Fairbanks-Morse, 20 h. p., 3 phase, 60 cycle; Westinghouse 10 h. p., 220 v., 3 ph., a. c., 60 cycle.
Pipe machines, Merrill 4".
Pipe machines, Eaton-Cole-Burnham 4" & 8"; B. & K. 4" to 12".
Saw, Sterling hack, 6"x6".
Slotter, Niles 15".
Upsetters, Acme, 1/2" steel bed.

SECOND-HAND MACHINERY

FOR SALE BY

The Reeve-Fritts Company, - 37 So. Desplaines St., Chicago, Ill.

Arbor press, No. 5 Atlas, 1700 lbs.
Drill, radial, 24" Canedy-Outo.
Grinder, motor, 3 h. p. Ransom, for
12"x24" wheels.
Lathe, 14"x6" Carroll-J., q. c. g.
Lathe, 15"x6" Monarch, q. c. g.

Lathe, 24"x10" South Bend.
Miller, spline, 4" Pratt & Whitney.
Miller, plain, No. 1 Kempsmith,
with rack cutting attachment.
Miller, universal, No. 2 Becker,
vertical head.

FOR SALE BY

Louis E. Emerman & Company, 1761 Elston Ave., Chicago, Ill.

Bending brake, Chicago, capacity 1"x6", motor driven.....	\$ 850.
Bending rolls, Wickes Bros., capacity, 4"x10".....	2875.
Drill presses, Kern 42", brand new.....	575.
Drill, multiple, Natco No. 30, 20"x40" h. ad. 48 spindles.....	1150.
Drill, multiple, Natco No. 32, 20"x54" head, 42-14" spindles.....	1250.
Gear cutter, Brown & Sharpe No. 4, 36" capacity.....	450.
Gear generator, Gleason 11".....	575.
Gear hobber, Newark No. 2.....	350.
Grinder, automobile cylinder, Baxter D. Whitney No. 23.....	875.
Hack saw, Peerless 9"x9", motor driven.....	325.
Lathes, Gisholt 20" automatic turret.....	1750.
Milling machine, Valley City No. 1 1/2 universal, complete.....	775.
Planer, 24"x24"x8" Gray, single head.....	775.
Planer, 84"x84"x32" Putnam, 4 heads, with motor.....	4250.
Punch and shear, Williams-White No. 14, double end.....	1250.
Radial drills, Bickford 2 1/2" single pulley drive.....	550.
Squaring shear, Long & Allstatter No. 4, 1 1/2" plate.....	850.

FOR SALE BY

McCoy-Brandt Machinery Co., 210-14 Penn Ave., Pittsburgh, Pa.

Air compressors, belted, 242 cu. ft.
Air compressors, steam, 909, 2052
and 2200 cu. ft.
Bolt cutter, 24" Landis, single head.
Boring mill, 10" Niles, 2 heads.
Boring mills, 42" Bullard New Era.
Bulldozers, Nos. 2, 3, 4, 6 and 12.
Bulldozers, Nos. 29 & 30 W. W.
Drill, 26" Cincinnati, sliding head.
Drills, radial, 5" Prentice, m. d.
Flanging mch., McCabe, cap. 1/2" plate.
Forging machines, 2", 3", 4" and 5".
Gear generator, 15" Gleason, m. d.
Grinder, Gisholt universal tool.
Grinder, Diamond 36", wet tool.
Grinder, 10x32 Ott universal.
Grinder, 12x48 Cincinnati universal.
Grinder, No. 4 Gardner double disc.
Lathes, 14"x 6" Hendey, grd. hd., m. d.
Lathe, 17"x12" LeBlond, g. h., t. a.
Lathe, 19"x14" LeBlond, g. h., turn.
Lathe, 24"x26" American, m. d.
Lathes, 26"x12" Putnam, cone.
Lathe, 26"x12" Wickes, q. c. g., new.
Lathe, 50"x25" Bement, triple grd.
Millers, horiz. Nos. 3 & 5 Cincinnati.

Miller, vert., No. 0 Bickett.
Millers, vert. No. 3 B. & S., m. d.
Millers, Nos. 2, 5C & 6 Becker vert.
Motors, 5 & 7 1/2 h. p., a. c.
Nut tappers, 10 spindle, rotary, cap.
1 1/2" nuts.
Nut tappers, 10 sp., Nat., cap. 1 1/2".
Pipe machines, 12", 10", 8", 4" & 2".
Planer, 30"x30"x8" Flatber, 1 head.
Planer, 84"x84"x17" Pond, 3 hds.
Planer, 120"x25" Sellers, 4 hds. m. d.
Press, No. 68 Bliss, double acting.
Press, No. 51 Bliss, s. a., 1 1/2" stroke.
Punch, dbl. end, 20" throats, 1 1/2"x1".
Rolls, bending, 16"x8" Wickes, m. d.
Rolls, bending, 12"x5/16" H. & J.
Rolls, bending, 10"x14 ga. Bertsch.
Rolls, bending, 10"x14", horizontal.
Shaper, 16" American, b. g., crank.
Shear, angle, 6"x6". L. & A. dbl., m. d.
Shear, plate, 126"x1", m. d.
Shears, alligator, cap. 3" & 4".
Shears, guil., cap. 2 1/2", 2" & 1".
Shear, rotary, cap. 1", with circ. att.
Shear, rotary bevel, cap. 1", m. d.
Turret lathe, 18" Libby, like new.

SECOND-HAND MACHINERY

FOR SALE BY

The Hess Schenck Company,

Cleveland, Ohio

BORING MILLS.

No. 48 Colburn vertical boring mill, 2 swivel heads.

No. 48 Colburn vertical boring mill, 1 swivel head and 1 turret head.

DRILLS—RADIAL.

4' Hammond sensitive radial drill.

DRILLS—UPRIGHT.

20" Barnes all-geared, (3).

25" Barnes, sliding head, b. g., p. f.,

a. s.

25" Barnes, sliding hd., b. g. & p. f.

No. 314 sgl. sp. Baker high duty (2).

2-spindle Moline hole hog, 7-D.

4-spindle Moline hole hog, 13-D.

6-spindle Moline hole hog, 65-D.

GRINDERS.

Model B 1x2 1/2 Yankee twist drill.

No. 1 LeBlond univ. tool & cutter.

10x24 Landis universal.

No. 4 Badger disc grinder & press.

No. 6 Bryant chucking grinder.

16x66 Landis, with crankshaft grinding equipment.

24x12x9 Diamond auto. surface.

LATHES.

12"x 5' Hendey, tie bar head, q. c. g., comp. rest, oil pan.

12"x 5' Hendey, tie bar head, q. c. g., taper att., comp. rest, oil pan.

14"x10' Whitcomb-Blaisdell, 3-step cone, d. b. g., q. c. g., comp. rest, oil pan and pump, 12" 4-jaw chuck.

16"x 8' Hamilton, q. c. gear, comp. rest, 12" 4-jaw chuck.

16"x 6' Monarch, q. c. g., double back geared, 8" 4-jaw chuck.

18"x 6' Schumacher & Boye standard lathe, 12" 4-jaw chuck, comp. rest.

26"x10' LeBlond crankshaft lathes, universal type, (2).

MILLING MACHINES.

No. 25 Becker plain, b. g., hor. feed

to table, direct connected 1 h. p. 3 phase, 60 cycle, 220 volt mtr., (2).

No. 3 Becker cone type, universal.

No. 2 B. & S. plain, cone type.

No. 2B heavy B. & S., cone type.

No. 2 Garvin duplex.

Cincinnati, Lincoln type, semi-auto., table 11x51.

No. 2 B. & S. univ. cone type miller.

No. 13 B. & S., Lincoln type.

Hendey, Lincoln type.

PLANERS.

24"x34"x8' Cincinnati, 1 hd. on rail.

42"x36"x8' Gray planer.

SHAPERS.

16" Steptoe crank.

15" Hendey shaper.

16" Hamilton b. g. crank.

16" G. E. back geared crank.

25" Smith & Mills, b. g.

TURRET LATHES AND SCREW MACHINES.

No. 1 Garvin screw machine, 1/2" cap., auto. chuck, wire feed, oil pan.

No. 2 B. & O. hand screw machine, auto. chuck, 1" cap., plain head, oil pan.

No. 6 W. & S. screw mchs., p. f. to turret & cross slide, oil pan & pump, (2).

1 1/2" Cleveland, model B.

1 1/2" Gridleys, belt & mtr. dr., a. c., (5).

1/2" No. 52 National Acme.

3x36 J. & L. turret lathe, d. c. to 3 h. p., a. c. motor.

No. 4 W. & S. univ. turret lathe.

No. 55 National Acme, direct connected to a. c. motor.

Fay, equipped for gear blanks, (2).

1 1/2" model A Cleveland, (3).

3 1/2" & 4 1/2" model A Cleveland.

MISCELLANEOUS.

Arc welder, 50 to 300 amp., 70 volts.

Broaches, No. 3 LaPointe, single and double spindle

Die sinker, No. 2 Pratt & Whitney.

Forging machine, 1/2" Acme, continuous motion.

Forging press, 150-ton high speed steam hydraulic.

Gear cutters, 6" Gleason straight bevel, (2).

Gear cutters, 15" Gleason spiral bevel, with auto. stops, (2).

Hot pressed gear nut mche., 1" Ajax.

Hot pressed gr. nut mche., 1 1/2" Ajax.

Nut burring machine, 1 1/2" Acme, double spindle, semi-auto.

Press, No. 3 Toledo, o. b. i.

Shear, power squaring, 36" Niagara.

Tappers, 6-spindle 1/2" & 1/4" Acme.

SECOND-HAND MACHINERY

FOR SALE BY

Bennett Machinery Co.,

Drill, radial, 3' Bickford plain.
 Lathe, 24"x10" Draper.
 Lathe, 26"x10" McCabe.
 Lathe, 32"x35" Bement Miles.
 Lathe, 40"x13" Putnam, triple grd.

30 Church St., New York City

Lathe, 18"x 8' Monarch, q. c., t. a.
 Pipe machine, 6" Curtis & Curtis.
 Planer, 64"x12' Pond, 4 heads.
 Planer, plate, 18' Niles.
 Shaper, 15" Pratt & Whitney.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

43"x17'4" Bement-Miles.
 42"x16" Niles taper att.
 37"x14" Johnson d. b. g., q. c. f., t. a.
 32"x12" Pittsburgh, heavy duty, q. c. g.
 27"x12" Bullard.
 26"x11" Wickes, q. c. g.
 25"x10" Niles, q. c. g.
 25"x14" Hendey, q. c. g., taper attachment, oil pan, (2).
 24"x14" Porter.

21"x8" LeBlond.
 20"x8'6" Walcott, d. b. g., q. c. g., (2).
 20"x 8' Whitcomb Blaisdell, q. c. g.
 19"x10" Draper, patent head.
 18"x 8' Davis q. c., d. b. g.
 18"x 7' Chard, d. b. g., semi q. c. g.
 18"x6" to 8' lathes. (6).
 16"x 8' Greaves & Klusman, b. g., t. a.
 And many others.

TURRET LATHES.

34"x25" Pond, triangle.
 3x36" Pratt & Whitney, hollow hex.
 20" Acme flat, 24", h. s. motor drive.
 20"x7' 6" Pratt & Whitney, back grd.
 20"x7' Bridgeport, 24" h. s.
 19"x7' Fay & Scott, back grd.
 No. 22 1/2 Garvin Monitor.

No. 3 Kempsmith.
 14"x 6' Warner & Swasey.
 16"x6" Johnson, back grd.
 No. 3 Bardons & Oliver back grd.
 14"x5' 3" Pratt & Whitney, (2).
 No. 3 Foster Kimball.

DRILL PRESSES.

42" Gang radial, s. p. speed box.
 40" Barnes horizontal radials, (2).
 36" Bickford radial, circular base, motor driven.
 28" Rockford, q. c. g. feed (2).

28" No. 3 Avey high speed, (2).
 14" 6-spindle Allen sensitive.
 Henry & Wright sensitive.
 Plain drills, all sizes.
 Drill presses, assorted sizes.

MILLING MACHINES.

28"x6" Ingersoll horizontal slab.
 No. 5 Cincinnati, table 94"x50".
 No. 2 Pratt & Whitney die sinker.
 No. 15 Garvin, table 12x42".
 No. 3 Becker Brainard, table 12x40".
 No. 3 Hendey-Norton, q. c. g.

No. 0V Brown & Sharpe plain, (2).
 No. 5-C Becker vert., rotary table.
 No. 5-B Becker vert., table 14x43.
 No. 7-H Lincoln type Becker miller.
 No. 3 1/2 Fox.

PLANERS AND SHAPERS.

12"x10"x25" Sellers planer, 4 heads.
 30"x30"x8" Hewes & Phillips planer.
 30"x30"x8" Putnam planer.
 26 1/2"x26"x 6" Hendey planer.
 24"x24"x6" Sellers planer.

48" Morton draw-cut shaper.
 39" Pedrick & Ayer, open side.
 28" Cincinnati.
 14" Warren shaper.

MISCELLANEOUS.

Band metal saw, 6x6 Napier.
 Boring mill, car wheel, 60" Newton.
 Boring mill, 36" Baush & Harris vertical, double head.
 Boring, drilling and milling machine, 17 1/2" Bement Niles horizontal.
 Centering machine, 4" Whiton.
 Grinder 13 1/2"x5" Landis universal.
 Grinder, No. 1 Norton universal.
 Grinder, disc, No. 17 Besly.
 Grinder, disc, No. 1 Besly.
 Hammer, 15 lb. Bradley helve.
 Hammer, 25 lb. Little Giant, m. d.

Hammer, 40 lb. Bradley helve.
 Hammer, 60 lb. Hotchkiss.
 Hammers, 60 lb. Bellefonte upright, 2.
 Hammer, 500 lb. Merrill belt drop.
 Hammer, 1000 lb. Merrill board drop.
 Hammer, 1250 lb. B. II steam.
 Keyseaters, 18" stroke Morton, (2).
 Punch presses, all sizes, (55).
 Punch & shear, Industrial Wks. d. e., capacity 1 1/2" in 1/2", squaring 1 1/2"x6".
 Slotter, 14" Niles.
 Tooth round g mch., Schuchardt & S.

Large assortment of General Machinery. Send for Complete List.

SECOND-HAND MACHINERY

FOR SALE BY

Eastern Machinery Co., 408 E. Pearl St., Cincinnati, Ohio

MILLING MACHINES.

- | | |
|---|---|
| <p>No. 2 Hendey Norton universal, cone type, complete.
 No. 2 Cincinnati universal, cone type, complete.
 No. 12 Brainerd universal, cone type, complete.
 No. 3-B B. & S. plain., single pulley.</p> | <p>No. 3-B Kearney & Trecker (Milwaukee) plain, single pulley.
 No. 3 Kempsmith plain, cone pulley.
 No. 2 Cincinnati plain, cone pulley.
 No. 6 Whitney hand miller.
 No. 3 Brown & S. vert., sgl. pulley.
 No. 5-C Becker vert., cone pulley.</p> |
|---|---|

LATHES.

- | | |
|--|---|
| <p>12"x 6' Hendey, q. c., with taper.
 14"x 6' Lodge & Shipley, quick change, with taper.
 14"x 6' Bradford tool room, taper, relieving and collet attachments.
 16"x 8' Hendey, q. c., with taper.
 16"x 8' American Tool Works, quick change, all geared head.
 16"x 8' Seneca Falls q.c., with taper.
 18"x 8' American Tool Wks., q. c.
 18"x 8' Monarch, q. c., with taper.</p> | <p>19"x10' R. K. LeBlond, quick chg., virtually new.
 20"x12' R. K. LeBlond, qck. chg.
 20"x14' R. K. LeBlond stan. chg. gr.
 22"x10' Hamilton semi-quick change gear, with taper.
 24" raised to 30"x14' R. R. LeBlond standard change lathe.
 36"x22' Putnam triple geared, semi-quick change.
 42"x20' Poud, standard change gear.</p> |
|--|---|

DRILLING MACHINES.

- | | |
|---|--|
| <p>5' American Tool Wks. plain radial, gear box drive.
 4' Western plain radial, gr. box dr.
 3' American Tool Wks. plain radial, cone pulley drive.
 24' Cincinnati-Bickford plain radial, gear box drive.
 4' Almond folding arm high-speed ball bearing sensitive radial.
 28" Cincinnati-Bickford upright, gear box drive and tapping.
 25" Barnes stationary head upright.</p> | <p>19" Aurora upright, with tapping.
 24" Barnes upright, with tapping.
 22" Barnes upright.
 20" Prentice Bros. plain drill press.
 14" Avey high speed single pulley ball bearing drills.
 14" Allen high speed two-spindle ball bearing drills.
 No. 25 Foote-Burt heavy duty vertical, gear box.
 No. 2 Colburn heavy duty vertical, gear box.</p> |
|---|--|

MISCELLANEOUS.

- Air compressor, 12"x10" Ingersoll-Rand class E-R-1, with slip ring, 3 phase, a. c. motor and starter.
 Bolt cutter, 1" Acme, single spindle, quick opening die head.
 Bolt cutter, 1 1/2" Laudis, single spindle, quick opening die head.
 Boring mill, 42" Bridgeport vertical, turret head on rail.
 Boring mill, No. 21 Lucas horiz., gear box drive, 24" bar.
 Grinder, cylinder, No. 60 Heald, complete equipment.
 Grinder, internal, No. 70 Heald.
 Grinder, plain, 10"x50" Norton.
 Grinder, univ. tool & cutter, No. 3 Oakley.
 Grinder, univ. tool & cutter, No. 2 Ohio (Oesterlein).
 Hammer, power, 90 lb. Williams-White, belt driven.
 Keyseater, No. 0 Little Giant (Mitts & Merrill), arranged for motor drive.
 Planer, 26"x26"x 6' Cincinnati, 2 heads on rail, belt drive.
 Planer, 30"x30"x12' Gray, 1 head on rail, belt drive.
 Press, power, No. 34 Toledo, o. b. i., fly wheel drive.
 Press, power, No. 5-A Willard, o. b. i., fly wheel drive.
 Press, power, forcing, 15-ton Lucas, belt drive.
 Punch & shear, No. 17 Williams-White, double end, 25" throat.
 Shaper, 16" Smith & Mills crank, latest type, friction cone.
 Shaper, 24" Cincinnati back geared crank.
 Shear, No. 1 Quickwork, 60" throat, belt drive, cap. 14 gauge and lighter.
 Shear, 42" Niagara power square, belt drive.
 Slotter, 24" Newton, cone pulley drive.
 Welder, Federal Electric, cap. 2 pieces of 3/4" metal.
 Welder, butt, National Electric, up to 1/2" diameter.
 A large assortment of practically new Leather Belting, Line Shafting, Pulleys, Hangers and small tools of all kinds. Your inquiries respectfully solicited.

Our prices save you money.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., No. 3 Fox St., Bridgeport, Conn.

We guarantee each Drill Press listed below to be in first class running condition.

DRILL PRESSES.

20" Prentice, not b. g. (2) each	\$ 80.	28" Snyder b. g., sliding head	\$ 300.
22" Snyder, b. g., p. f.	110.	28" Aurora b. g., sliding head	325.
22" Barnes, not b. g.	90.	42" Prentice b. g., sliding head	400.
24" Prentice, b. g., s. h. (3) ea.	250.	24" G. & E. two spindle	250.
26" Snyder b. g., p. f.	225.	20" Rockford three spindle	300.

SENSITIVE.

12" Floor type	\$ 35.	Three spindle Reed	\$ 75.
Two spindle Reed	90.	Three spdl. Pratt & Whitney	150.
Two spindle Henry & Wright	175.	Four spdl. H. & W. (7)	\$175.

RADIAL.

2' Mueller, like new	\$ 750.	6' Bickford universal	\$1000.
3' Fosdick, plain	575.	No. 1 Barnes horizontal	450.

MULTIPLE SPINDLE.

12 spindle Western, p. f.	\$ 325.	Gardam, arranged for 18, equipped with 16	\$ 450.
No. 25 Natco, 20 spindle, equipped with 8	475.	No. 22 Natco, arranged for 16, equipped with 6	800.
No. 13 P. & W. 20 spdl. (2) ea.	750.		

Why not come and see them, or write for photo and good description.

FOR SALE BY

Reliance Machinery Sales Company

Brighton Road at Pennsylvania Ave., Pittsburgh, Pa.

Air compressor, 321' Laidlaw, b. d.	Lathe, 34"x12' LeBlond, trip, grd.
Band saws, 36" Amer. metal cutting.	Miller, No. 2 Cincinnati, h. p., vert.
Band saws, 26" 32" and 36" Silver.	Miller, No. 3 Hendey plain.
Blower, No. 3-F American.	Miller, model "B" Becker, vert., s.p.d.
Boring mills, 30" Bullard, 1 head.	Nut tapper, 1" Acme, 6 sp., semi-aut.
Boring mill, 34" Colburn, 1 head.	Pipe machine, No. 9 Jarecki, 1 to 4".
Boring mill, 72" Betts vert., 2 hds.	Pipe machine, Cox, 2 1/2" to 8".
Boring mill, 90" Niles vert., 2 hds.	Pipe machine, Merri 1, 2 1/2" to 12".
Buffer, No. 14 Builders Iron Fdry.	Pipe machine, Stoeve, 3 1/2" to 12".
Bulldozers, Nos. 5, 6, 7 & 8 W.-W.	Planer, P. & W., 16"x16"x4", 1 hd.
Die sinker, No. 6 Jackson.	Planer, 30"x30"x10" Powell, 1 head.
Drill, 21" Cincinnati, s. h., t. a.	Press, No. 73 Consolidated, o.b., 2 1/2" st.
Drill, 24" Hoefler, sliding head.	Press, No. 74 Consolidated, o.b., 2 1/2" st.
Drill, 36" Snyder, sliding head.	Press, No. 65 Consolidated, geared.
Drill, 2' 6" Carlton high speed radial.	Press, Ferracute, type SA182, 500-t.
Drill, 4' Bickford radial, g. b., s. p.d.	Punch, Cleve., 24" thrt., 1 1/2" x 1 1/2", m. d.
Drills, Amer. 4 & 5" radial, g. b., s.p.d.	Punch, Cleve., 15" thrt., 1 1/2" x 1 1/2", m. d.
Drills, No. 2 Colburn, mfg. type, (4).	Punch, No. 6 L. & A., s. e., 1 1/2" x 1 1/2".
Drill, No. 2 Colburn 4-spdl. gang.	Screw mchs., No. 52 National-Acme.
Drillers, 3-spindle Detroit, (2).	Screw mchs., No. 55 National-Acme.
Flanging machine, McCabe.	Screw mchs., No. 73 National-Acme.
Gear cutter, 6" Standard, spur.	Screw mchs., No. 53 National-Acme.
Gear cutter, 36" Whiton.	Screw machine, No. 2 Foster, pl. hd.
Gear cutter, 60" Gould & E.	Screw machine, No. 2 W. & S., pl. hd.
Generator set, 250 k. w., G. E., 250 volt, d. c.	Shaper, 16" Hollingsworth, b.g. crank
Grinder, No. 2 Detroit centerless.	Shaper, 20" Cincinnati, b. g. crank.
Grinder, Norton 10"x24".	Shear, No. 38 L. & A. alligator, 14".
Hammer, 40 lb. Bradley, cush. helve.	Shear, No. 54 Beloit combination.
Hammer, 100 lb upright power, b. d.	Shear, bevel, Thompson, 1 1/2" cap.
Hammer, 2500 lb. Morgan, st. forg.	Shear, bar, capacity 6"x1" flat.
Jointer, 12" Silver.	Shear, squaring, 96" Stull, 16 ga.
Lathe, 14"x8" Whitcomb-Blaisdell.	Shear, squaring, 96" power, 20 ga.
Lathe, 16"x6" Prentice, bargain.	Shear, 48" Bertsch, 18" gap, 10 ga. cap.
Lathe, 24"x12" Rohn & L., q. c. g.	Upsetter, 3" Acme.
Lathe, 30"x12" Johnson, triple grd.	Upsetter, 4" Ajax, steel bed, side shear.

Our warehouse is full of bargains. What have you for sale?

SECOND-HAND MACHINERY

FOR SALE BY

Fred C. Dickow Machinery Co.,

2105 W. Lake St., Chicago, Ill.

Arbor press, Greenard No. 15...	\$ 90.	Lathe, 3x36 J. & L. turret, A-1#	285.
Grinder, Norton cr. shaft; cost \$4200; like new; no counter...	385.	Lathe, 2x26 P. & W. tur., 1. new	375.
Grinder, Bath compl. univ.	190.	Miller, No. 3 Kempsmith.....	650.
Lathe, 21"x9" L. & Davis A-1..	225.	Miller, Hendey slab, tbl. 3x54	225.
Lathe, 13" Gisholt, like new...	485.	Miller, No. 0 Steptoe, i. centers	435.
Motors, speed and engine lathes, drills, grinders, hack saws, oil burners, etc.		Planer, 22"x24"x5' Putnam....	385.

FOR SALE BY

Brownell Machinery Co.,

11-13 Eddy St., Providence, R. I.

BORING MILLS.

24" Bullard New Era vertical.		No. 1 Lucas horizontal, 3".	
48" Colburn vertical.		No. 3A Universal horizontal, 3".	

DRILLING MACHINES.

16" Henry & Wright, b. b.		Reed-Prentice b. b., 3 spindle.	
23" Snyder, stationary head.		Henry & Wright b. b., 5-spindle.	
26" Hofer, sliding head.		Henry & Wright sens. radial, b. b.	
Demco bench No. 34A, 3-spindle.		4' Mueller plain radial, s.p.d.	
Demco bench No. 34A, 4 spindle.			

MILLING MACHINES.

Ingersoll, fixed rail 24x8, 3 heads.		Briggs type A, plain.	
No. 1-M Potter & Johnston.		No. 3 Brown & Sharpe vertical.	
No. 1 1/2 Brown & Sharpe universal.		No. 4 Becker vertical.	
No. 28 Oesterlein plain.		No. 6 Becker vertical.	
No. 15 Garvin plain, 42" table feed.		No. 6 Whitney hand.	
No. 25 Bilton plain, b. g.			

LATHES.

Bosworth milling lathe.		14"x10' Hendey, q. c. g.	
12"x5' Vernon, q. c. g.		20"x8' Roulsted.	
14x6' Lodge & Shipley.		26"x16' Reed, taper.	
16"x6' Cisco, q. c. g.		26"x21' Reed, taper.	

PLANERS AND SHAPERS.

17"x17"x 4' Whitcomb.		42"x54"x14' Gray.	
22"x22"x 5' Whitcomb.		16" Sellow tool room shaper.	
24"x24"x 6' Powell.		26" Kelly back geared shaper.	
26"x30"x14' Whitcomb-Blaisdell.		28" Hendey friction shaper.	
36"x36"x22' Pond, 3 heads.			

SCREW MACHINES.

No. 2 Soutworth, 1", plain head.		2x24 J. & L. flat turret, for chucking.	
1 1/2x18" Pratt & Whitney, b. g., p. f.		No. 6A Potter & Johnston, s. p. d., for chucking.	
No. 2 1/2 Garvin, g. f. h., p. f.			

PRESSES.

50 lb. Standard automatic drop.		No. 124 Max Ams inclinable, s. a.	
200 lb. Standard automatic drop.		No. 54 Niagara s. s., 4" geared.	
200 lb. Standard plain drop.		No. 1 Standard broaching and drawing, 20 tons.	
No. 3-B Standard inclinable s. a.			

ROLLING MILLS.

4x6 McWilliams plain bearing.		6x10 McWilliams plain bearing.	
5x8 McWilliams plain bearing.			

WOODWORKING MACHINES.

Band saw, 36" Sidney.		Jointer, 18" Crescent.	
Band saw, 42" Clement.		Lathe, 16x9 Robbins patternmakers.	
Jig saw, No. 1 Beach.		Planer, buzz.	
Jointer, 8"		24" Witherby, Rugg & Richardson.	

MISCELLANEOUS.

Gear cutter, No. 3 Brown & Sharpe.		Grinder, No. 3 Wilmarth & Morman surface.	
Gear cutter, Whiton hand feed.		Shear, McWilliams power rotary.	
Gear shaper, No. 612 Fellows.		Slotter, 12" Bement Miles.	
Grinder, No. 1 LeBlond universal tool & cutter.		Swaging machine, No. 2 Angell.	

SECOND-HAND MACHINERY

FOR SALE BY

The Randle Machinery Co., 1723 Powers Street, Cincinnati, Ohio

ENGINE LATHES.

14" x 6' Carroll-Jamison, q. c. \$	300.	22" x 18' Niles, loose change.. \$	700.
15" x 6' Flather, loose change.	250.	24" x 12' Rahn-Larmon, quick	
16" x 8' Reed, loose change ..	275.	change, taper attachment....	975.
20" x 12' Bradford, q. c.	750.	22" x 10' Niles, loose change....	400.

PLANERS.

60" x 48" x 16' Pond, 2 heads.....	\$1,750.
24" x 24" x 6' Ohio, 1 head	600.
28" x 28" x 8' Putnam, 1 head.....	750.
33" x 32" x 12' American, 2 heads.....	1,250.
36" x 36" x 14' American, 2 heads.....	1,350.
Pedrick & Ayer open side, planes 30" wide, bed 11' long.....	1,000.

MISCELLANEOUS.

Bolt cutter, Acme 4" sgl. hd.	\$ 750.	Grinder, No. 60 Heald cylinder \$	750.
Boring mill, 60" Niles vert.	750.	Miller, No. 3-B Milwaukee,	
Drill press, 28" Cincinnati up-		single pulley drive	1,150.
right, b. g., single pulley,		Radial drill, 6" Niles full univ.,	
gear box drive	475.	d. c. motor dr., with motor....	750.
Drill press, 45" upright, back		Shaper, 12" Pratt & Whitney	
geared, power feed	300.	crank, traveling head.....	300.
Drill press, 24" Aurora up-		Shaper, 24" Barker, b. g. crank	675.
right, back gear, pwr. fd.	275.	Turret lathe, 24" Gisholt, d. c.	
Miller, No. 2-B heavy Brown		motor drive, with motor.....	500.
& Sharpe, sgl. pulley drive	950.		

Many other bargains. Send us your requirements.

FOR SALE BY

A. F. Strafer, 30 Church St., New York City

October Specials at Bargain Prices.

Automatics, No. 52 and No. 53 National Acme.	
Drill, 310 Baker, h. d., single pulley drive.....	\$ 400.
Drills, 24" Cincinnati Bickford upright, like new	275.
Flat turret lathe, 24x26 Acme, bar equipment, like new.....	650.
Flat turret lathe, 24x26 J. & L., bar equipment, high serial number	400.
Radial drill, 48" Drees, tap. attach., box table, motor drive	450.

BORING MILLS, VERTICAL AND HORIZONTAL.

80" Pond vert., heavy, belt drive.	60" Niles-B.-P., grd. feed, s. p. d.
52" Niles-B.-B. latest type, like new.	42" Bullard, 2 heads, gear feed.
60" Bullard, gear fd., 2 hds., belt dr.	No. 2 Rochester horiz., s.p.d., 3" bar.
No. 3 Universal horizontal, s. p. d.	No. 2 Barrett horizontal cylinder.

DRILLS, UPRIGHT AND RADIAL.

6' Reed Prentice, tap. attach., s.p.d.	5' Western, tap. attach., s. p. d.
48" Drees, d. c. motor drive.	38" Morris, s. p. d., like new.
310 Baker, heavy duty, 28" cap.	28" Sibley, s. h., b. g., p. f.
25" Barnes, stationary head, b. g.	24" Cincinnati Bickford, latest type.

LATHES.

44" x 24' N.-B.-P., belt drive.	36" x 24' Pond, belt drive.
25x20 Reed, c. r., belt drive.	25" x 24' Reed, motor drive.
24" raised 32" x 16' Lodge & S., belt.	28" x 21' Flather, q. c., t.a., belt.
16" x 8' Flather, quick change.	14" x 8' Lodge & Shipley, belt.

MILLING MACHINES.

No. 4 Cincinnati h. p., s. p. d., plain	No. 3B Brown & Sharpe plain.
No. 3 LeBlond universal.	No. 2B Brown & Sharpe universal.
No. 3 Ohio universal, like new.	No. 3 Cincinnati vertical, h. p.
No. 5C Becker vertical, like new.	No. 7H Becker, mfg. type.

PUNCHES AND SHEARS.

Gate shear, Hillis Jones, 1" cap., 9'	No. 4 H. & J. dbl, 48" t., a. c. mtr.
blade, 28" gap, with a. c. motor.	No. 7 Ryerson, 72" t., 1 1/2" cap., new.
Double angle shear, Hillis-J. No. 3,	No. 5 H. & J. 48" t., a. c. motor.
cap. 6x6x1", complete, a. c. motor.	No. 6 H. & J. 32" t., belt drive.

SECOND-HAND MACHINERY

A. F. Strafer—Continued

PLANERS.

60"x60"x12' Niles-B-P., heavy box table, elec. rev. drive 4 h., latest.
48"x48"x14' Patch, 4 h. motor drive.

PIPE MACHINES AND BOLT CUTTERS.

No. 8 Stover, s. p. d., set of dies.
No. 732 Little Giant, 1" cap. bolt.

SHAPERS.

24" American, s. p. d.
16" Smith & Mills, belt drive.

SCREW MACHINES AND TURRET LATHES.

3½x36 Acme, chuck equip., grd. hd.
2½x26 Acme, complete bar equip.
19x8 LeBlond, comb. eng. & turret.

MISCELLANEOUS.

Air drills and grinders, \$25 each.
Air hammers, riveting, 6" Boyer, guaranteed, \$15 each.
Chipping and caulking hammers, \$12 each.
Cranes, 5-ton, 67', 55', 45', 37' span, motor and hand operated (4).
Hoists, 3-ton Shepard, with trolley.
Knife grinder, 30" Springfield auto.
Rolls, Niles-Bement-Pond 20", capacity 1", 50 h. p., a. c. motor, modern drop end.
Upsetting machine, Ajax, with dies for rivets, cap. 1½".

I can sell your surplus equipment, if it is modern, at a fair price.

FOR SALE BY

Botwinik Brothers, 21 Sylvan Ave., New Haven, Conn.

"Connecticut Machinery Merchants"

SCREW MACHINES.

25 Smurr & Kamen 1" capacity hand screw machines, complete with countershafts, wire feeds, tool posts, pumps, piping, etc.; practically new; price for quick sale \$125.00 each f. o. b. cars, New Haven, Conn.

Send for our latest 52-page Catalog No. 101.

FOR SALE BY

The O'Brien Machinery Co.,

113 N. Third St., Philadelphia, Pa.

Bending rolls, 12' Kling, motor dr., 15" & 11" dia. rolls, cap. ½" plate.
Drill, 32" Aurora, motor driven, tapping attachment.
Grinder, 6" x32" Norton plain.
Hammer, 100 lb. Massillon, steam.
Lathe, 24"x12' Schumacher & Boye.
Miller, No. 2 Cincinnati plain, geared head, single pulley drive.
Miller, No. 3-H LeBlond plain.
Miller, No. 3-B Hendey plain.
Miller, No. 4 LeBlond plain, heavy duty.
Miller, No. 2 Rockford universal.
Miller, No. 3 Kempsmith universal.
Milling and drilling machine, No. 2 Knight vertical.
Pipe machines, 2", 4", 6", 8" & 12"
Oster, Cox, Eaton-Cole & Burnham and Jarecki makes, belt or motor driven, complete stock.
Planer, 36"x36"x12" Woodward & Powell, motor driven, 3 heads.
Planer, 54"x54"x14" Pond Machine Tool Co., two heads.

Presses, Nos. 18, 19 and 20 Bliss.
Press, No. 54 Toledo gr. str. side.
Punch, No. 2 H. & J., sgl. end, 36" thru, motor dr., cap. 1½" thru 1".
Punch, Rock River, single end, 42" thru, motor dr., cap. 1½" thru 1".
Punch and coping machine, 36" cap., Long & A. type B, motor driven.
Punch and shear, No. 3 Hilles & J., dbl. end, motor dr.; punch end, 42" thru, cap. 1½" thru 1"; shearing end, 36" thru, cap. 1" plate, 2½" round, 7"x1½" flat, 5"x5"x½" angle.
Radial drill, 48" Cincinnati Bickford, motor driven.
Shapers, 12", 14", 16", 21" and 24" stroke, assorted makes.
Shear, Ryerson rotary bevel, cap. ½" plate.
Trimming press, No. 75½ Bliss, straight side, with side shear attachment.
Turret lathe, No. 64 Bardons & Oliver, wire feed, cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

A. M. Stoehr Machinery Co.,

Blue printing and drying machine.
Boring mills, 42" Baush, 54 & 60"
Niles, all have 2 heads.
Drill presses, 1 spindle Sigourney;
24" Barnes, with tap. attachment;
3 spindle Barnes all geared.
Gear hobbers, cutters: 12" Barber-C.;
12" Cin.; 48" & 60" Gould & E.
Grinders, Heald piston ring (4);
Nos. 1 and 3 LaSalle plain and
surface; 3"x18" Norton.
Hammer, 500 lb. Beaudry, & others.
Lathes, 22" to 44" McCabe; 9x42
Barnes; 14x8 Rockford, q. c. g., late
type; 14x8 American, q. c. g.; 18x8
Barnes heavy duty; 15 & 24 spin-
ning, and others to 60".
Milling mchs., No. 25 Becker plain;
No. 14 Valley City plain; No. 0
Rockford plain; No. 2 Van Norman
Duplex, & others.
Oil extractors, centrifugal, (8).

560 W. Adams St., Chicago, Ill.

Pipe machines, 2" & 6" Jarecki.
Punch and shears, No. 5 Long & A.
double end, 8" thru 16"; No. 14 W.,
double end, 15" thru.
Punch presses, No. 16 Bliss boring;
No. 3 Bliss Stiles; No. 4 Robinson;
o. b. i.; No. 4 Long & A. multiple
punch; and others.
Rolls, 10" Bertsch, pipe forming.
Saws, 6x6 Peerless high speed; 9x9
Sterling high speed; 12x12 Racine
high speed.
Screw machines, Nos. 2 & 3 Foster
(12); Nos. 52 & 53 Acme; No. 0
B. & S.; others plain & universal.
Screw threader, No. 10 Waterbury.
Shears, No. 3 N. D. splitting, 4" cap.;
Pittsburgh alligator, 1".
Shapers, 7" Rhodes, bench; 14"
Stephens; 18" Flather, crank.
Welders, both spot and butt.
Wire strait'g mche., 3/16" Shuster.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1001-3-5 N. Sixth St.,

St. Louis, Mo.

9"x12" Sundstrand.
15"x 8" Sidney, q. c.
18"x 6" American, q. c.
21"x 8" Sidney, q. c.
24"x12" Lodge & Shipley, q. c.
26"x16" Niles, plain change.

Smith & Mills, all sizes.

24"x24"x 6" Lodge & Davis.
32"x32"x 8" Whitcomb.

10"x36" Thompson universal.
8" Heald rotary, with magnetic ck.
Wilmarth & Morman drill grinder.

20" Barnes.
24" Aurora, sliding head.
28" Barnes, stationary head.
34" sliding head.

No. 2 Kempsmith plain.
No. 4 Becker-Brainerd universal.

Boring machine, horizontal, No. 2
Pawling & Harnischfeger.
Boring mill, No. 1 Binns horiz.
Boring mill, 60" Bullard.
Bulldozer, 75-ton Louie hydraulic.
Engines, Corliss, 75 to 200 h. p.
Gas furnace, Gilbert & Barker.
Keysater, No. 60 Baker.
Magnetic pulley, 24"x26".
Press, portable, hydraulic.
Punch, No. 14 Williams-White, dbl.

LATHES.

26"x13" Putnam, q. c., ar. for motor.
30"x15" American, q. c.
32"x16" LeBlond, q. c.
33"x20" Draper, triple geared.
35"x18" Prentice Bros., t. a.
20" Pit lathe.

SHAPERS.

16" Flather, 4 speeds.

PLANERS.

36"x36"x10" Flather.
60" open side Detrick & H., 3 heads.

GRINDERS.

12"x42" Landis universal.
30" Diamond face grinder.
5"x18" Ott plain grinder.

DRILLING MACHINES.

3' arm Mueller speed box drive.
5' arm Prentice radial.
4 spindle Avey, power feed.

MILLERS.

No. 34 Knight vertical.
Nos. 0 and 3 Burke bench millers.

MISCELLANEOUS.

Punch, No. 5 Long & Allst., 5" thru.
Punch, No. 7 Long & Allst., 4" thru.
Riveter, 24" Shepard.
Saw, No. 12 Higley.
Saw, No. 21 Higley.
Saw, Lucas revolving, 31" blade.
Screw machine, No. 6 Woods.
Shear, squaring, 50" Excelsior.
Shear, power, circle, Niagara.
Spot welder, Toledo, 20 k. w.
Tilted turret lathes, Wood. (2).

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc.,

No. 3 Fox St., Bridgeport, Conn.

LATHE CHUCKS.

We have a surplus of good used Chucks, two, three and four jaw.

Price:—\$2.00 per inch; (10" Chuck—\$20.00, etc.)

Tell us what size you need and we will send it c. o. d.

FOR SALE BY

Tubor, Velick & Co., Inc., - - 628-630 W. Lake St., Chicago, Ill.

Telephones: Monroe 4199-6813. No Branches

PUNCH PRESSES.

No. 2 Walsh.
No. 4 Walsh, (5).
No. 5 American Can.
No. 4 Rockford.
No. 7 Beatty, cap. 1½" in 1".
No. 15 Torris Wold.
163½ Toledo, 9½" stroke.

No. 17 Williams-White double end punch & shear.
Nos. 13 & 15 single end punches.
No. 15 Kick presses.
Long & Allstatter horn punch, capacity 1½x1.

DRILL PRESSES.

14" Excelsior.
20" b. g., p. f., new, \$130.
20" Weigel.
26" Hoefel.

4-spindle Avey, hi-speed, auto. feed.
4-sp. Whipp, hi-speed, No. 2 taper.
Bench type drills, #16.
Baker heavy duty.

MILLING MACHINES.

No. 2 LeBlond.
No. 2 Cincinnati vertical.
No. 3 Kempsmith.
No. 24 Rockford universal.

Kearney & Trecker No. 2-A, single pulley drive.
A number of hand millers.

LATHES.

11"x 5' Sterling.
12"x 5' Worcester, q. c.
14"x6' Prentice.
15"x 5' South Bend.
15"x 8' Sidney, q. c.
16"x 6' Sidney, q. c., (2).
16"x 6' Monarch q. c.
16"x 8' Canedy-Otto.
16"x 6' Hendey, q. c., taper att.
16"x 8' South Bend, q. c.

17"x 8' Sidney, q. c.
18"x 8' Chard.
19"x10' Sidney, q. c., (2).
20"x 8' Lodge & Shipley, geared head, s. p. drive.
24"x10' Canadian, q. c., d. b. g., (3).
26"x10' Lodge & Shipley, q. c.
27"x14' Sidney, q. c.
Dalton Six.

PLANERS.

24"x24"x6' Pond.
24"x24"x 8' Putnam.
30"x30"x 8' Fitchburg.

36"x36"x 7' Flather, 2 heads.
36"x36"x 8' Cincinnati.

SHAPERS.

14" Flather.
16" Ohio.

16" Queen City.
16" & 20" Whipp, b. g.

SCREW MACHINES.

No. 2 Pratt & Whitney, hand.
Warner & Swasey.

No. 2 Smith, hand.
No. 00 Brown & Sharpe, automatic.

GRINDERS.

B. & S. universal.
No. 2 Manhattan surface.

No. 14 Besly, disc.
Emery grinders, #2 and up.

WOOD-WORKING MACHINERY.

Band saws, 36" Famous, new, (10).
Boring mills, Andrew, (3).

Swing saws, Porter, (4).

MISCELLANEOUS.

Brake, power, 6' Dreis & Krump.
Buffers, U. S. and Westinghouse,
5 h. p., b. b.
Cold saw, No. 20 Lea-Simplex.
Hack saws.
Lift trucks, Barrett, 1 ton cap.
Motors, a. c. and d. c.

Punch & shear, No. C Cleveland.
Radial drill, 3½" Canedy-Otto.
Radial drill, 3½" Cin'ti Bickford.
Roll, power, 10" roll, capacity 4" plate.
Time clocks, International.
Woodworking machines.

Leather belting. Pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

Carbon Steel Company, Ft. 32nd St. & A. V. R. R., Pittsburgh, Pa.

The complete liquidation of the Carbon Steel Company makes available the following tools:

Drill, Pond Machine Co. 6' radial, belt drive.....	500.
Grinders, Espen Lucas 1 1/2 x 12" spindle.....	each, 75.
Lathes, Israel H. Johnson 30" x 18", bk. grd., 3-step cone drive, (2).....	ea., 350.
Lathe, Schumacher, Boye & Emmes 18" x 8', d. b. g., 3-step cone & c. s.....	250.
Lathe, 36" x 27" roll lathe, 60" face plate.....	500.
Shears, side cutting, Lewis Foundry, s. grd., 18" blade.....	each, 200.
Shear, plate, R. D. Wood 2" x 128" hyd., 26" capacity.....	
Shears, Mackintosh steam dr., 30 1/2" thr., 4" str., 24" shear blade, (2).....	ea., 500.
Shear, Mackintosh s. grd., 22" throat, 16" blade, 2" stroke.....	250.

FOR SALE BY

**E. L. Easley Machinery Co., 551-557 Washington Blvd., Chicago, Ill.
Branch Store, 78-80 W. Water St., Milwaukee, Wis.**

Boring mill, 24" Bullard vert.	Miller, univ., No. 2 Clev. sgl. pul. dr.
Boring inche., No. 1 Cleveland.	Miller, thread, 6" x 80" Pratt & W.
Drill, 24" No. 310 Baker hvy. duty.	Planers, 36" x 36" x 12' Rockford, 2 hds.
Drill, No. 25 Foote-Burt.	Planer, plate, 16" No. 3 Niles.
Drill, mult., D-12 Fox, rect. ang. hd.	Planer, 72" x 62" x 45' Hamilton, 4 hds.
Gear cutter, 30" x 10" x 4p Flather aut.	Press, No. 512 Niagara, s. s.
Hammer, 1200 lb Bliss board drop.	Punch, No. 8 Whiting, s. e., 48" thrt.
Keyseat miller, No. 3 J. T. Burr.	Shear, 8' Stoll, power sq., gd.
Lathe, 20" x 12' Hendey, q. c. g.	Sh., splitting, No. 134 Lennox rotary.
Lathe, 30" x 12' LeBlond.	Shear, No. 696 Niagara gap.
Lathe, 30" x 28 1/2' Pond.	Shear, gate, No. 64 Hillis & J. crk.
Lathe, 38" x 18' New Haven.	Slotter, 26" Niles, gd.
Lathe, pulley, 40" Streit.	Turret lathe, No. 2 A W. & S. univ.
Miller, plain, 28" type "A" Briggs.	Turret lathe, No. 4 Foster plain.
Miller, pl., No. 2 Clev., sgl. pulley dr.	Turret lathes, 18" x 26" Libby.

FOR SALE BY

Jones Machine Tool Co., 528-532 E. Front St., Cincinnati, O.

LATHES.	
14" x 6' Bradford, quick change.	24" x 16' American, q. c., cone drive.
14" x 6' Monarch, qck. chg., s. p., geared head, (2).	30" x 12' H. S. & Gamble, q. c.
16" x 6' Lodge & Shipley, qck. chg.	24" x 12" x 16' Schumacher double spindle lathe.
20" x 12' Greaves Klusman, q. c.	
MILLERS.	
No. 1 1/2 B. & S. plain.	No. 2 Kempsmith plain.
No. 2 Hendey plain.	No. 2 1/2 LeBlond universal.
PLANERS.	
36" x 36" x 8' Flather, 2 heads.	32" x 20' American, 2 heads.
30" x 8' Gray, 2 heads.	42" x 36" x 26' Cincinnati, 2 heads.
PRESSES.	
Nos. 2 & 3 Toledo, o. b. inc.	No. 18 Bliss, open back inc.
No. 2 Robinson, o. b.	No. 20 Bliss, o. b. inc., (10).
No. 3 L. & A. double end punch.	Horning pres., No. 15 Robinson, (3).
SHAPERS.	
14" Steptoe, plain crank.	21" American, back geared crank.
18" Barker, plain crank.	24" Barker, back geared crank.
20" Steptoe, back geared crank.	24" Smith & Mills, bk. grd. crank.
SQUARE SHEARS.	
36" No. 236 Niagara, power.	96" Robinson, power, 14 gauge.
96" P. S. & W. foot power, 20 ga.	10'-10 gauge, worm drive.
MISCELLANEOUS.	
Bolt cutters, 1 1/2" Acme, (2).	Grinder, No. 60 Heald, cylinder.
Drill presses, 24" Sibley & Ware (4).	Grinder, Heim centerless.

SECOND-HAND MACHINERY

FOR SALE BY

The Patterson Tool & Supply Co.,

Dayton, Ohio

Drill, rad., used 3' Hilbert.....\$ 300.
Drill press, used 20" Barnes... 50.
Grinder, used Leland univ.... 180.
Lathe, new 12x5 Monarch q. c. g. 350.
Lathe, new 16x8 Monarch q. c. g. 475.

Lathe, used 16x8 Miami Valley \$ 250.
Lathe, used 40"x20" Fairfield... 1500.
Saw, circ. met., new 34" Swind 150.
Shaper, new 28" Columbia.... 1250.
Screw mch., used No. 3 Superior 200.

FOR SALE BY

Marr-Galbreath Machinery Co.,

127 Water St., Pittsburgh, Pa.

Bolt cutters, Acme, 1 1/2", 2", 2 1/2" & 5".
Bolt cutter, 1 1/2" Acme, triple head.
Boring mill, No. 5 B. & S. post.
Boring mill, Betts horiz., 3 & 4 bars.
Boring mill, vertical, 72" Betts.
Boring mill, 40" sgl. hd., light \$175.
Brake, hand & foot, 50" P. S. & W.
Brake or press, 10" Robinson, toggle.
Bulldozers, Nos. 1, 2, 3, 4, 5, 26 & 27.
Bulldozers, Nos. 6, 8 & 9 W. W.
Compressor, 1170 cu. ft. Chicago, belt or m. d. (A-1).
Compressor, 14"x10"x12", Ingersoll.
Drills, radial, 3' Bickford plain, t. a.
Drill, radial, 3' Prentice plain.
Drill, radial, 2 1/2" Taylor-Fenn, sens.
Drills, 36" Hofer; 20" Barnes, b. g.
Drill, 28" Barnes, sliding hd., b. g.
Drills, No. 2 Colburn, mfg. type. (4).
Drill, Allen, 20" sensitive, 4-svd.
Drill, heavy duty, 24" Foote-Burt.
Exhauster, No. 8 Buffalo.
Exhausters, No. 28 Sturtevant, dbl.
Forging mche., 1 1/2" Acme, side shear.
Gear hobber, No. 12 Barber Colman.
Gear & pinion cutter, No. 2 Sloan & Chace.
Grinder, No. 3 Ohio univ. tool & c.
Grinder, No. 2 Stenotype, double end, with 2 magnetic chucks 7"x9".
Grinder, Yankee drill, "A", dbl. end.
Hack saws, 4", 6" & 8", belted or m. d.
Hammers, 80 & 100 lb. Bradley helve.
Hammers, steam drop, 1500, 3000 lb.
Hammers, st. drop, 5000, 2500 lbs.
Hot saw & burring machine, Acme.
Keyseater, No. 1 Baker, for motor.
Keyseater, No. 2 Davis, cap. 1/2".
Lathe, gap, 36/60"x12/20" Harringt'n.
Lathe, 36"x16" American, g. h., t. a., a. c. motor. (98%)
Lathe, 30"x12" LeBlond, q. c. g., t. a.
Lathe, 24"x8" Porter, 2 1/2" h. s., a. c. r.
Lathes, 20"x10" Schellenbach, gd. hd.
Lathe, 18"x10" Porter, s. b. g., c. r.
Lathe, 18"x8" Hollingworth, q. c. g.
Lathe, 18"x8 1/2" Hendey, pl. change.
Lathes 18"x10" L. & S. & LeBlond.
Lathe, 16"x8" Bradford, pl. change.
Lathe, 14"x6" Monarch, q. c. g., t. a.
Lathe, 13"x6" South Bend, comp. rest.
Lathe, speed, 11"x4" Prentiss, t-rest.
Miller, No. 6 Whitney, hand, (univ.)

Miller, vertical, No. 2 Brown & Sharpe, gear box.
Miller, bench, No. 1 Burke, hand.
Miller, No. 3 1/2 Fox, hand, 24"x6"x14 1/2".
Miller, No. 0 1/2 Cin. pl., 18"x6"x15".
Miller, No. 1 1/2 Rockford, plain, 24"x7 1/2"x19".
Miller, No. 3 Cincinnati, plain.
Miller, No. 3 H LeBlond, pl. ind. hd.
Miller, No. 35 Oesterlein, universal.
Miller, No. 2 Kennis-Smith universal.
Miller, slab, 18"x18"x8" B. & S.
Motor, 110 h. p., 110 v. d.c., 1050 rev.
Nut tapper, 1/2" Acme 6-sp. semi-auto.
Pipe machine, 6" Williams, mtr. dr.
Pipe machine, 6" Oster, belt drive.
Planer, 42"x42"x12" Betts, 1 head.
Planer, 42"x36"x20" Cin'ti, 4 heads.
Planer, 36"x36"x10" Pond, 3 heads.
Planer, 30"x30"x 8" Niles, hy., 2 hds.
Planer, 28"x28"x 6" Gale, 1 head.
Planer, 24"x24"x 5" New H., 1 hd.
Planer, 16"x16"x12", crank drive.
Press or brake, 10" Robinson, toggle.
Press, No. 27 Bliss, horning, b. g.
Presses, No. 7 1/2 Bliss, tie rod 6" st., s. b. g., m. d.
Presses, No. 61 & 62 Bliss, plain, 6" & 8" strokes.
Presses for 3" horn, pl., 1 1/2" stroke.
Press, No. 56 Toledo, pl. trim., 3" str.
Press, No. 11 Perkins, pl. trim., 2 1/2" str.
Punch, No. 2 Whitney hand, like new.
Riveting hammers, 3A & 4A High Speed.
Riveter, 1/2" Shuster, style A.
Shaper, 7" Rhodes, crank, horiz.
Shaper, 21" American, b. g., crank.
Shaper, 20" Cin'ti, b. g., crank.
Shaper, crank, 17" Smith & M., s. g.
Shaper, 28" Hendey, pillar type.
Shaper, 18" Barker, crank.
Shear, 60"x16 ga. 18" gap, power.
Shear, No. 3 Quickwork, cap. 1/2" a. c. motor.
Shear, rotary, 1/2" Lennox, 8" gap.
Shear, plate, 9"x1 1/2" cap. 15", m. d.
Shear, 124"x1 1/2" 24" gap, m. d.
Shear, plate, 15 1/2"x1 1/2" m. d. 100%.
Slotter, 15"-18" Dill, a. c. mtr.
Slotter, 8" Betts, for motor drive.
Turret lathe, No. 1 Bardons & Oliver.
Turret lathes, Libby, 18", 22" & 26".

We Buy, Sell and Exchange.

SECOND-HAND MACHINERY

FOR SALE BY

Clark Machinery Co., 1235-45 St. Clair Ave., Cleveland, O.

Lathe, 16"x6' Lodge & S., q.c., d b g.	Screw machine, No. 2 W. & S.
Lathe, 14"x6' Hendey, q.c., taper att.	Screw machine, No. 5 Foster.
Miller, hand, No. 00 Brown & S.	Screw machine, No. 6 Foster.
Millers, vert., Nos. 2, 3 & 5 Becker.	Shaper, 14" Juengst.
Punch press, No. 2 Bliss cons. o.b.i.	Shaper, 16" Ohio.
Punch press, No. 3 Niagara, o.b.i.	Shaper, 16" Queen City, b. g.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

Bolt cutters: Landis, Geometric.	Lathes: Hendey, Vernon, Niles.
Boring mills: Bullard.	Millers: Brown & Sharpe, LeBlond,
Drill presses: Allen, Avey.	Kemp Smith.
Gear cutters: Brown & S., Gould	Punch presses: Nos. 1 and 7.
& Eberhardt.	Radial drills: Fosdick, Bickford.
Grinders, disc: Besly, Gardner.	Screw mchs., auto: Gridley, Warner
Grinders, univ.: Brown & Sharpe,	& Swasey, Brown & Sharpe.
Wilmarth & Morman.	Shapers: Gould & E., Smith & Mills.
Hack saws: Peerless.	

We have a large stock of modern iron and metal working machines, also chucks, vises, etc., etc. Write us your wants, we can save you money.

FOR SALE BY

Norton-Broadway Machinery Co., 236-38 Broadway, Cincinnati, O.

LATHES.

12"x21"x8' Willard, removable	25"x10' Hamilton, q. c., com-
gap, quick change.....\$ 525.	ound rest and turret.....\$ 725.
14"x6' LeBlond, q. c..... 300.	26"x14' Putnam, ex. hvy. duty.. 1250.
16"x6' Columbus, prac. new... 295.	24"x12' Monarch, q. c., heavy
16"x6' Cincinnati, q. c..... 275.	duty, modern, A1 shape..... 1250.
16"x8' Lathe & Morse l c..... 100.	24"x12'x12' Schumacher & B.
16"x8' Lodge & D., old style.. 100.	double spindle..... 675.
20"x6' Fay & Scott, l. c..... 195.	

MILLING MACHINES.

2-B Brown & S., sgl. pulley...\$ 775.	No. 4 Cin'ti plain, incomplete\$ 300.
No. 3 Brown & Sharpe plain.. 525.	No. 20 Oesterlein universal.
No. 5 Brown & Sharpe plain... 625.	No. 2 Cincinnati, old st. univ. 425.

SHAPERS.

16" Queen City, b. g. crk., belt	26" Hendey, geared friction
shifter.....\$ 375.	type.....\$ 300.
14" Rockford, crank..... 275.	24" Queen City, b. g. crank... 725.

DRILLS.

24" Hoefler, 2-spindle.....\$ 375.	24" Cincinnati, tapping att. ...\$ 310.
32" Aurora, sliding head..... 250.	30" Prentice radial..... 425.
20" Bickford, sliding head..... 295.	24" Aurora, sliding head, (8).

PLANERS.

16"x18"x48" Hendey.....\$ 250.	36"x36"x12' Gray, one head...\$ 900.
36"x36"x12' Gray, 2 heads..... 750.	42"x42"x26" Cincinnati, 2 hds... 2500.
32"x32"x20" American..... 950.	

BORING MILLS.

84" Niles, vertical, 2 heads.....\$1750.	42" Colburn, 2 heads.....\$1200.
42" Bullard, 2 heads..... 1250.	36" Niles, 2 heads..... 750.

MISCELLANEOUS.

Punch presses, Bliss, Willard, Sidney, Niagara, Ferracute and East Iron.
 Punches, Nos. 4, 5 and 7 Long & Allstatter.
 Punch, style A Long & Allstatter, 2" thru 1 1/2", 14" throat.....\$ 850.
 Turret No. 6 Warner & Swasey..... 525.
 Compressors, Pumps, Engines, Boilers, Threading Machine, Grinders,
 Swaging Machines, etc., etc.

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Blowers
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Furnaces and Ovens
Grinders
Lathes
Milling Machines
Tapping Machines, Etc.

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Arbor Presses
Broaching Machines
Drill Presses & Drilling Machines
Grinders
Gear Tooth Rounding Machines
Gear Hobbing Machines
Gear Shapers
Lathes—
 Plain
 Turret
 Speed
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 Auto. Chucking & Turning
 Auto. Screw Machines
Milling Machines

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Dort Motor Car Company
Flint, Michigan

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**Right Now the Entire Equipment of Our
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HIGH GRADE MACHINE TOOLS—About 2,000 modern high-grade machine tools of well-known makes, used in the manufacture of four and eight cylinder motors;

A COMPLETE TOOL ROOM—Equipped with the very best tools obtainable;

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This is without doubt the best lot of tools ever offered for sale. This plant was in operation only a short time. The tools were under strict supervision and were handled with care; hence can be classified as good as new.

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Get in touch with us for Quick Bargains—a personal call from your representative is the best

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Lexington & McPherson Streets

PITTSBURGH, PA.

To Buy a Good Used Machine

Tool From "Oviatt"—Is An
Investment, Not An Expense

Toledo Knuckle Joint Coining Press, No. 666.
Toledo Straight Side Press, No. 59¼.
Bliss Stiles Flywheel Presses Nos. 3 & 4.
Ferracute P-4, Toledo No. 36 Geared Presses.
Bliss No. 2-W Wiring & Reducing Press.
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No. 17 Foote-Burt 4 Spindle Adj. 2" Cap.
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Briggs Millers, Type "B" 34"; Type "A" 22".
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Oesterlein Universal Tool Grinder, No. 3.
Norton No. 1 Tool & Cutter Grinder.
Colburn 60" Vertical Boring Mill.
High Speed Riveting Hammers, Nos. 3A-HD & 4A.
Acme Bolt Cutters, 2½" Sgl. and 1" Dbl.
Garvin Tappers, Nos. 2 & 2-BG.
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Gridley 3¼" Single Spindle Automatic.
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Federal Spot Welder 1/16" Cap., Power Drive.

*The Above And Hundreds Of Other
Machine Tools In Stock*

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PRICED TO SELL High Grade Machine Tools

Slightly used. With a good-as-new, money-back guarantee

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 $\frac{3}{8}$ -1 $\frac{1}{4}$ Cleveland Model A.
 2" Cleveland Model A.
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36" Colburn Heavy Duty.
 4 sp. Avey, p. f.; No. 14 Natco.
 Nos. $\frac{1}{2}$ -1-1 $\frac{1}{2}$ Avey H.S. Sens.
 20" 4-Spindle Rockford.
 Garvin Double End Horiz.

GRINDERS

10x36 Norton.
 14x36 Norton.
 No. 10 B. & S. Plain.
 No. 4 Landis Universal.
 No. 70 Heald Internal.
 No. 2 B. & S. Surface.

MILLERS

28" Cincinnati Duplex.
 No. 2 Rockford Univ. S. P. D.
 Nos. 2 & 3 Cincinnati plain.
 No. 28 Ohio.
 No. 2 Kempsmith universal.

MISCELLANEOUS

Taft Pierce Thread Miller.
 No. 4 W. & S. univ. tur. Lathe.
 36" Gisholt Vert. Tur. Lathe.
 9x9 Peerless Saw, Motor Drive
 24x24x6 Powell Planer.
 No. 0 Mitts & Merrill Keyseater
 4" P. & W. Spline Miller.
 300 Face and Straddle Milling
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Mid-West Machine Tool & Supply Co.
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Are You Thinking—

Of installing a Radial Drill? If so, the
 following machines are **REAL** bargains:

- 1—2 $\frac{1}{2}$ ' Standard type, heavy duty, MUELLER
radial drill, gear drive.
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Prices will arouse interest

Write and Satisfy yourself

The Mueller Machine Tool Company

Radial Drills and Lathes

ESTABLISHED 1902

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At the old reliable Machinery Headquarters—

J.J. McCABE SINGER BUILDING NEW YORK CITY

You get the best in New and Used Machine Tools.

Every Tool on this List is backed by us, as being the latest type in condition equal to New and ready to pass the keenest inspection.

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84" swg. x 46' bed Putnam Grd. Hd.
66" swg. x 46' bed Putnam Grd. Hd.
36"x14' Geared Head. Bridgeford.
30" swing x 20' bed McCabe, Quick
Change Cone Drive.
30" swing x 14' High Duty Lathe,
Quick Change.
24" swing x 14' bed Reed-Prentice
Quick Change.
Geared Head Lathe, Single Pulley
Drive, Taper.

ALSO

42" Baush Boring Mill, 2 heads,
Quick Change.
24" Stroke. Niles-Bement-P. Slotter.
4' Arm Radial Drill with geared
speed box drive.
No. 2 Cincinnati Vert. Milling Mch.

Two Good Sellers

No. 3 Baker Keyseater, 26" Stroke.

24" Stroke Gould & Eberhardt
Back-Geared Shaper.

McCABE "2-in-1" DOUBLE SPINDLE LATHES

26/48 swing x 12' bed.
26/48 swing x 26' bed.
38"/60" swing x 32' bed—complete
with Geared Face Plate, Taper
Attachment. Can also include
motor and silent chain.

PLANERS

84"x60"x30' Pond, 4 heads.
60"x60"x16' Gray spiral grd., 4 hds.
54"x54"x12' Pond, 4 heads.
48"x48"x15' Pond, 2 heads.
26"x26"x 6' Niles, 1 head.
42"x36"x16' Detrick & Harvey,
open side.

BOILER SHOP TOOLS

18" Double End Punch and Shear.
42" Perkins Punch.
50" McCabe Punch and Shear.
60" Hilles & Jones Horiz. Punch.
8' Rolls, heavy type, power raise.
10' Bending Rolls, drop end housing.
19" Gap Air Riveter.
800-lb. Bement-Miles Steam Drop
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110" Swing, 40' Bed,
Triple Geared Lathe.
Cone drive or can be
arranged for belted
motor drive with motor
on top of headstock.

Used Milling Machines—Horizontal
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Grinders—Universal, Roll and Cyl.

Turret Lathes, Gear Cutters, Saws,
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SINGER BUILDING - - NEW YORK CITY

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Aultman & Taylor Machinery Co.,
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Random Selections

Air Compressor, Chicago 9x11, M. D.
Air Compressor, Ingersoll-Rand 14x12, M. D.
Ajax Bulldozer No. 8-BW.
American Lathe, 24"x12", Medium Pattern.
Barrett 36" Cylinder Boring Mill.
Bath Universal Grinder No. 2½.
Bausch Vertical Boring Mill, Two Heads, 60".
Bolt Cutters: Acme, National & Landis, Sgl. & Dbl.
Bending Rolls, 16'-1" Plate, M. D., Drop End.
Bull Riveter, 120 Ton Hanna.
Bullard Vertical Boring Mill, 36" New Era.
Bullard Boring Mills, 42" & 51".
Cleveland Horizontal Boring Mill No. 1.
Colburn Boring Mill 54" Rapid Traverse.
Defiance Hydraulic Tire Press No. 4, 60 Ton.
Federal Butt Welder, 3-60-440 V., 65 K. W.
Fellows Gear Shapers No. 6.
Gisholt Turret Lathe, 28" Swing.
Heald Ring Grinder, 16" Magnetic Chuck, No. 260.
Hendey Lathe 20"x8", Geared Head.
Hurlburt-Rogers Cutting-Off Machine, 4" capacity.
J. & L. Turret Lathes, 3x36 Sgl. & Dbl. Spindle.
Libby Lathes, 18 and 22" Swing.
Lodge & Shipley 36"x8" Patent Head Lathe.
Lodge & Shipley 38"x20" Geared Head Lathe, M. D.
Low Swing Lathe, 4"x108".
Metalwood Hydraulic Forcing Press No. 20.
Metalwood 65 Ton Hydraulic Straightening Press.
Milwaukee Miller No. 3B, Universal.
Natco Drill No. 30, arr. 36 spdls., 26 in Place, B.D., 95%.
Niles Bending Rolls 12', 1" capacity, Drop End.
Norton Plain Grinder 14"x72".
Norton Plain Grinder 10"x52".
Norton Crankshaft Grinder 22"x34"x120".
Oliver Band Saw 36", Iron Tilting Table.
Punches & Shears: Sgl. End, 1", 1¼" & 1½" cap., M.D.
Toledo Cranes: 5 & 7½ Ton, 30' Span, A. C. Motors.

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D. M. Osborne Machinery Company

Liquidation Engineers

Box 853, Station "H"

Cleveland, Ohio

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REG. U. S. PAT. OFF.

Our Autumn "Green List" is just recently off the press. You should have a copy of this directory of machine tool bargains at hand for ready reference. Write for one.

The following listings are only representatives of the several thousand tools in our great stock.

LATHES

- 13-Porter-Cable.
- 10-34" Fitchburg.
- 8-8" Fitchburg.
- 1-Bogart Crankshaft.
- 1-28" LeBlond Crankshaft.
- 1-10"-12"x5" Pratt & Whitney.
- 1-Streit Pulley.
- 5-13"x5" Willard.
- 1-14"x6" Fay & Scott.
- 7-14"x6" Rockford.
- 2-14"x6" Carroll-Jamieson.
- 1-16"x8" Carroll-Jamieson.
- 8-17"x6" LeBlond Pl. Turning.
- 1-17"x19"x8" Sidney.
- 5-19"x8" Boye & Emmes.
- 1-18"x20"x8" American, gd. hd.
- 10-19"x8" LeBlond.
- 2-19"x10" LeBlond Univ. Turret.
- 12-20"x8" LeBlond.
- 65-20"x8" American
- 1-20"x10" Lodge & Shipley.

MILLERS

- 45-No. 6 Whitney.
- 50-Garrigus.
- 22-No. 1 Van Norman.
- 61-No. 34 Fox.
- 1-No. 22 Garvin.
- 2-Stepoe, Hand.
- 34-12" Cincinnati.
- 3-No. 14B Milwaukee.
- 2-No. 2 Rockford, S. P. D.
- 2-No. 28 Ohio.
- 7-No. 2-B Brown & Sharpe.

GRINDERS

- 8-Heald Drill.
- 1-No. 6-26 Gardner Disc.
- 1-No. 16 Besley Disc.
- 1-Modern Internal.
- 1-No. 10-A Bryant Internal.

BORING MILLS—Vertical

- 7-24" Bullard Vert. Turret Lathe.
- 3-24" Bullard New Era.
- 2-30" Gisholt.

BORING MILLS—Horizontal

- 1-No. 31 Lucas.
- 3-No. 1 Barnes Horiz., 2 Heads.
- 3-Foote-Burt, 3" Bar.

DRILL PRESSES

- 1-24" Barnes Camel Back.
- 1-36" Snyder.
- 1-No. 121 Baker.
- 1-No. 315 Baker.
- 1-No. 24 Foote-Burt.
- 1-No. 25 Foote-Burt.
- 2-2 Spindle Henry & Wright.
- 1-3 Spindle Henry & Wright.
- 1-4 Spindle Henry & Wright.
- 10-6 Spindle Allen.

SHAPERS

- 1-12" Smith & Mills.
- 1-15" Potter & J. Tool Room.
- 3-16"-20" Ohio.

GEAR CUTTERS AND HOBBS

- 1-No. 00 Schuchardt & Schutte.
- 8-No. 1 Farwell.
- 1-No. 5 Lees-Bradner.
- 3-No. 1 Schuchardt & Schutte.
- 2-24" Gould & Eberhardt.
- 1-30" Flather.
- 7-No. 6 Fellows.
- 1-No. 13 Brown & Sharpe.
- 3-No. 3, 28" Brown & Sharpe.
- 3-36" Brown & Sharpe.
- 1-No. 612 Fellows.
- 1-No. 615 Fellows.

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Hill, Clarke & Co. of Chicago
649 W. Washington Blvd., Chicago, Ill.

Real Bargains in Used Tools

BORING MILLS

- 30" and 36" BULLARD boring mills, 3-jaw chuck tables.
 36" GISHOLT turret boring and turning mill.
 60" ROGERS-HEMPHILL boring mill, two heads.
 24" bar CLEVELAND horizontal, gearbox drive.
 24" bar LUCAS horizontal, gearbox drive.

DRILL PRESSES

- 29" SIBLEY & WARE, sliding head, b. g., p. f. No. 14 Natco 10-sp. (bored for 18 spindles.)
 6' GANG radial, gearbox drive. No. 15 HARRINGTON 4-spindle rail type, 14" capacity.
 3' AMERICAN sens. radial.

GEAR CUTTERS

- No. 12 BARBER-C. gr. hobber. | No. 6 FELLOWS gear shaper.

MILLING MACHINES

- No. 2 ROCKFORD universal, also plain.
 No. 2 CINCINNATI universal, all geared feeds.
 No. 3 CINCINNATI vertical milling machine.

PLANERS AND SHAPERS

- 30"x30"x 6' POND planer, one head.
 32'x32"x12' GRAY, two heads, self cont. countershaft.
 34"x36"x10' WILSON, two heads, like new.
 36"x30"x12' GORTON, two heads, countershaft.
 16" and 20" OHIO back geared crank shapers.

Above is small part of our stock. Send for complete list

STOCKER-RUMELY-WACHS CO.

117 N. Jefferson St.,

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WE ALWAYS feel kindly toward the chap who lends a hand—who does something to help us.

When you write an advertiser, even if just to make an inquiry, it is advantageous to create a favorable impression, which can be done easily enough if you will think to tell him that you saw his ad in Hitchcock's. He appreciates your telling him something he wants to know, and of course the Blue Book appreciates his knowing. It is a three-way benefit to you, to him and to Hitchcock.

A Quick Orderly Liquidation Sale

Of Machine Tools and Plant Equipment of the

RUSSEL MOTOR AXLE CO. at NO. DETROIT, MICH.

GEAR MACHINES

No. 6 Fellow gear shaper.
No. 612 Fellow gear shaper.
6", 11", 18" Gleason generators.

15" Gleason generator, spiral type.
12", 15", 20" Gleason gear roughers.
G. & E. gear roughers.

SHAPERS

20" R. A. Kelly shaper.

24" G. & E. shaper.

GRIDLEYS

1 1/2" to 1 1/4" Gridley multiple spindle automatic screw machines.
2 1/4" to 4 1/4" single spindle automatic screw machines.

MILLING MACHINES

No. 0 LeBlond plain.
Nos. 1, 2 and 3 Cincinnati plain.
18" Cincinnati duplex.
No. 3 Hendey Norton plain.
No. 5 Hendey Lincoln type.

No. 3 Hendey universal.
No. 2 Cleveland plain.
No. 3 LeBlond universal.
Model "A" Gooley & Edlund.

ENGINE LATHES

12"x6" & 18"x8" Hendey.
16"x6" Hamilton.
14"x8" F. E. Reed.
16"x6" & 20"x8" American.

20"x8" Lodge & Shipley.
24"x12" Warner.
24"x15" LeBlond.
30"x12" Lodge & Shipley.

TURRET LATHES

6 A Model 2 auto. turret lathe.
Nos. 3, 4 & 6 Warner & Swasey.
Nos. 2-A & 3-A Warner & Swasey.
3"x36" Jones & Lamson.

1 1/2"x8" & 3"x36" Pratt & Whitney.
2"x26" Pratt & Whitney.
7-A Chucking machines.
24" Gisholt, 6" hole.

RADIAL DRILLS

4' Dreses, 20"x30" table.

3' American Tool Co., 16"x26" table.

DRILL PRESSES

22", 25" & 26" Barnes single spdl.
25" J. E. Snyder Co.
25" Sibley Machine Tool Co.
Nos. 413 & 416 Baker Brothers.
No. 23 Foote-Burt 2-spdl. gang.
22 1/2" Barnes 3-spindle gang.

4-spindle Foote-Burt gang, 3" spdl.
4-spindle Foote-Burt gang, 3 1/4" spdl.
6-spindle multiple Baush.
16-spindle multiple Baush, b. d.
24-spindle multiple Baush.
36-spindle multiple Natco.

PRESSES

Cleveland single end punch, 12" thr.
No. 35 Michigan grd., 10" thr., 3" str.

No. 5 Ames compound mandrel.
15-ton Lucas geared force.

GRINDERS

Heald 18" surface.
10A Bryant internal.
No. 1 Besly plain, universal table.
10x24, 10x72 & 10x96 Norton plain.
No. 615 Fitchburg cylindrical.

No. 2 Gould & Eberhardt cutter.
12"x42" Landis universal.
No. 2-A Landis universal.
No. 1 Wilmarth universal.

BORING AND TURNING MILLS

20" Gisholt boring mill.

18" Cleveland horiz. boring mill.

MISCELLANEOUS

Nos. 3, 3A & 4 LaPointe broach. mch.
No. 00 Baker Bros. keyseater.
3"x5" Fairbanks-Morse pump.
5"x5" Fairbanks Morse pump.
No. 2X Garvin auto. tapping mch.
Thompson type "C" riveter.
6 Gear testing machines.

5 to 75 h. p., 3 ph., 60 cy. 220 v. mtrs.
14"x12" Ingersoll-Rand air compressor, belt drive.
Stromburg cost keeping system, consisting of No. 30 Master clock and 6 secondary clocks and other equipment.

Shafting, Belting, Pulleys, Hangers and Small Shop Tools.

— ADDRESS —

RUSSEL MOTOR AXLE CO., NO. DETROIT, MICH.

NEW 3 PHASE MOTORS CHEAP. 3 H. P. \$57.50; 5 H. P. \$67.50

LATHES

9" to 13" Barnes, h. s., cp. r., new.
12"x 8' Cleveland, geared head.
14"x 8' Young.
14"x 6' Hamilton, grd. hd., motor dr.
14"x 8' Sidney, double back geared.
14"x10' Reed-Prentice.
16"x 8' Sidney, double back geared.
18"x10' American, quick change.

20"x 8' American, geared head.
20"x10' Prentice, taper.
24"x24' Prentice, with raising block.
25"x12' Sidney heavy duty.
25"x14' Schumacher & Boye.
28"x 8' Bridgeport, heavy duty.
Ames precision bench, 1" & 1" cap.
8x60" & 10x72" Fitchburg Lo-Swing.

TURRET LATHES and SCREW MACHINES

14" Tilted turret hand screw mche.
1" and 1 1/2" Mulholland.
2x24 & 3x26 J. & L., dbl. equipment.
No. 3-B Foster, 5" capacity, new.

6" Gridley auto., single spindle.
Nos. 52 and 56 National Acme.
1" P. & W. automatic, single spdl.
21" Gisholt.

SHAPERS

14" Niles, traveling head.
14" Steptoe, crank.
16" American, tool room.

16" & 24" Barker, b. g. crank.
16" Smith & Mills, b. g. crank.
20" Walcott, geared.

PLANERS

24"x24"x 6' Gray.
32"x32"x 8' Gray.

36"x36"x10' Cincinnati, 2 heads.
60x60x17' Betts, 2 heads.

PRESSES

Nos. 3-A & 6-A Willard inclinable.
No. 1 Toledo inclinable.
Nos. 1 1/2, 2, 2 1/2 & 4 Robinson.

Emco, bench, for radio parts.
No. 35 Niagara straight side.
Perkins, dbl. housing, wt. 4,000 lbs.

DRILLS and RADIALS

3' and 3 1/2' Silver, new, gear box.
3' & 4 1/2' Morris plain gear box.
3 1/2' Canedy-Otto plain, new.
4" Universal Radial Drill Co. plain.
Sensitive 1, 2, 3, 4 and 6 spindle.

22", 24", 26", 28" and 32", sliding hd.
20"-24" & 26" Barnes, all geared.
4-spindle Sigourney sensitive.
4-spindle Reed sensitive.
Electric drills, Thor, all sizes.

MILLING MACHINES

No. 2 Kempsmith universal.
U. S. and Whitney hand.
No. 25 Becker plain, power feed.
No. 1 B. & S. universal.
Nos. 2-A & 4-B Becker vertical.

No. 3 LeBlond, with vertical attach.
No. 2 H Brown & Sharpe plain.
Briggs type "A" high duty, 24x8 table.
No. 7 Becker Lincoln type.
Oesterlein 24x7 1/2x18 plain.

GRINDERS

Nos. 1, 3 & 78 W. & M. surface.
No. 2 W. & P. 10x30 universal.
6"x15" Fitchburg plain.
12x36 Cincinnati universal.
12x42" & 16"x30" Landis plain.
12"x72" Brown & Sharpe plain.
36" and 66" Yates plate.

Perfection cylinder.
No. 60 Heald cylinder.
Nos. 2 & 3 Ohio universal & tool.
No. 4 Gardner 20" double disc.
No. 20 Bryant, chucking.
B. & S. No. 24 dbl. spdl., cylinder.
Capital internal, new, 2"x2".

MISCELLANEOUS

Band saw, metal, Klemm.
Band saws, Napier 4"x4", 10"x10".
Bending rolls, 7" for 1/2" plate.
Boring mill, Bullard 31" turret hd.
Boring mill, 54" & 60" Colburn, 2 hds.
Brake, 10', 18-gauge metal.
Broaching machine, No. 3 LaPointe.
Cold saw, Burr, 3" capacity.
Compressors, 8x4, 8x8 and 12x10.
Drawing tables, adjust., 42"x6" top.
Gear cutter, 26" No. 3 B. & S.
Gear millers, Bilton No. 1, (5).
Hammer, 40 lb. Bradley, helve.
Hammer, 150 lb. Standard drop.

Oil separator, Springfield.
Pipe machines, 2", 4", 6" & 12".
Pumps, Gould triplex, 6 1/2"x8" & 7x8".
Punch & shear 1/2" by 1/2", 10" throat.
Riveter, 1" Schuster.
Riveting hammers, No. 3-A h.sp. (2).
Scale, 1500 lb. Toledo, dial type.
Sceleroscopes, Shore, (2).
Shear, 5' Robinson, for 10 gauge.
Shear, No. 20 Quickwork, 30" throat.
Shear, circular, Pettingell 60".
Slotter, 18" Bement-Miles.
Tapping mche., 1/2" Rickert-Shafer.
Threading mche., W. & P. 2-spindle.

THE OSBORNE & SEXTON
MACHINERY COMPANY
COLUMBUS OHIO

DEPT. H.

Large Shears—

1—No. 411H Toledo 10' for 11 Gauge.

1—No. 500 $\frac{1}{4}$ Toledo 16' for $\frac{1}{4}$ " Plate, with 15" Gap.

IN EXCELLENT CONDITION

Other Machines Selected from our Stock

- No. 3 Cincinnati Vertical Miller.
- No. 5-B Becker vertical Miller.
- No. 6 Becker vertical Miller.
- No. 2B Brown & Sharpe Plain Miller, single pulley drive.
- No. 2B Heavy Brown & Sharpe Plain Miller, single pulley drive.
- No. 3 Cincinnati Plain Millers (two).
- No. 3 Kempsmith Plain Miller, latest type, excellent condition.
- No. 3 Heavy Duty LeBlond Plain Miller, with vertical attachment.
- 4—Single spindle No. 1 $\frac{1}{2}$ Avey Drills.
- Two Spindle No. 1 $\frac{1}{2}$ Avey Drill.
- Four Spindle No. 1 $\frac{1}{2}$ Avey Drill.
- 24" Aurora Sliding Head Drill, with tapping attachment.
- 36" Aurora Sliding Head Drills, (2).
- 24" Barnes two-spindle All-Geared Drill, with pump, etc.
- 3" Dreses Radial Drill.
- 5" Prentice Radial Drill.
- 24" Kelly back geared Crank Shaper.
- 30"x30"x8' Ohio late type Planer, one head on rail.
- 36"x36"x15" Betts heavy type Planer, two heads on rail.
- 30" Bullard Vertical Boring Mill, one turret head.
- 36" Niles Vertical Boring Mill, two heads.
- 42" Bullard Vertical Boring Mill, two heads, motor drive
- 24" Bullard Vertical Turret Lathe.
- No. 2B Binsse Horizontal Boring Mill, 2 $\frac{1}{2}$ " bar.
- 6x32 Norton Grinder.
- 14x72 Norton Plain Grinder.
- 16x96 Landis Plain Grinder.
- 16x48 Landis latest type Crank Pin Grinder, almost new.
- 20"x8" Lodge & Shipley Geared Head Lathe, quick change.
- 20"x10" American Geared Head Engine Lathe, quick change.
- 21" Gisholt Turret Lathe, latest type.
- 80 lb. Bradley Helve Hammer, excellent condition.
- 1 $\frac{1}{2}$ " Acme Double Head Bolt Cutter, rebuilt, excellent condition.
- 6" Robinson Brake.
- 10' Ohl Power Brake, for 3/16 capacity.
- 10' Pond Vertical Boring Mill.

36" Bullard Vertical Turret Lathe, excellent condition

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108-114 N. Jefferson St.,

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For a large list of used wood-working machinery, consult the **Wood-Working Machinery List**, a publication similar to this but devoted to the advertising of saw-mill and wood-working machines. A copy may be had on application to the publisher, **A. H. Hitchcock, 1220-1235 Caxton Building, Chicago, Ill.**

For Quick Clean-Up

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1—1½" and 3".
Rock River, Standard and Cleveland Bulldozers.

HAMMERS (BOARD)

400, 600, 800, 1000, 2000, 2500 and 3000 lb. Bliss and Chambersburg.

HAMMERS (STEAM)

300 lb. Post.
600 lb. Massillon, s. f.
800 lb. Bement, s. f.
1000 lb. McDougal & Potter, s. f.
1500 lb. Chambersburg, d. f.
2000 lb. Chambersburg, d. f.
2500 lb. Chambersburg, d. f.
4000, 6000, 10,000 & 12,000 lb. Bement.

PUNCHES AND SHEARS

Pels 1-Beam shear, capacity 15".
6"x6"x1" Cleveland Angle Shear.
6" Long & Allstatter Gate Shear, cap. 1", 36" thr.
24" cap. Chicago Alligator Shear.
5" cap. Carlin Alligator Shear.
Cleveland sgl. end. 4" cap., 20" thr.
Cleveland sgl. end. 24"x1" cap. 24" thr.
Cleveland sgl. end. 14" cap., 27" thr.
Cleveland sgl. end. 14" cap., 36" thr.
Cleveland sgl. end. 14" cap., 48" thr.
No. 8 Whiting single end, 14" capacity, 42" thr.
Above Motor Drive with arch. jaws.

SHAPERS

14", 16", 20", 24", G & E. & Rockford.
24" Norton Draw-Cut Shaper.

STRAIGHT SIDE PRESSES

D-201, DG-55, DG-56, E-57 Ferracute.
No. D, L. & A. Heavy Duty Press.
No. 6 American, Open Back Inc.

MILLERS

No. 3-H LeBlond, plain.
No. 15 Garvin, plain.
No. 21 Garvin, plain.
No. 2 Pratt & Whitney, vertical.
No. 3 Brown & Sharpe, vertical.
No. 5-B Becker, vertical.
No. 5-C Becker, vertical, s. p. d.
No. 6 Becker, vertical.
No. 24 Hendey Mfg.
No. 7 Becker.
24"x24"x12" Ingersoll.

LATHES

11"x5" Myers.
12"x5" Vernon, q. c. g., t. a.
16"x6" Putnam, t. a.
18"x6" Springfield, t. a.
19"x10" LeBlond, crankshaft.
20"x8" American, q. c. g.
20"x10" Bradford, b. g.
20"x8" Cincinnati, b. g.
21"x12" LeBlond, q. c. g.
24"x12" American, q. c. g.
30"x16" LeBlond, q. c. g.
36"x32" LeBlond, q. c. g.
46"x40" Pond, h. d.
60"x40" Fifield, h. d.
68"x40" Pond, h. d.
96"x40" Fifield, h. d.

GRINDERS

16"x68" Landis Crankshaft Grinder.
16"x36" Landis Universal Grinder.
26"x96" Landis Plain Grinder.

PUMPS AND AIR COMPRESSORS

120 cu. ft. Sullivan Horiz. Belt.
250 cu. ft. Union Horiz. Belt.
275 cu. ft. Gardner Portable.
600 cu. ft. Ingersoll, Steam.
1750 Laidlaw-Dunn & Gordon, Belt.
1850 Sullivan, Steam.
2000 C. P. T. Steam.
750 gal. Wheeler Fire Pump.
34"x10" Vert. Triplex Hyd. Pump.
7"x8" Deau Vertical Triplex.
9"x10" Gould Vertical Triplex.
9"x5½"x12" Deau Duplex.
10"x12"x16" Marsh Vacuum Pump, Steam.
14"x10½"x10" Worthington Duplex, Steam.

PRESSES

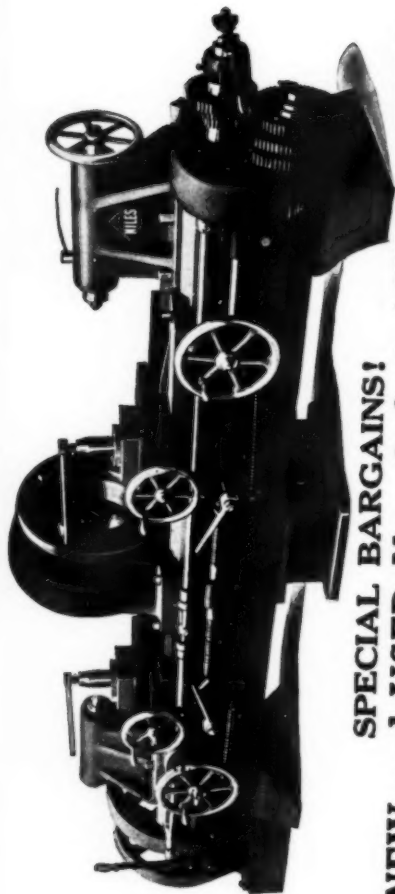
No. 7-B, 74½, 75½, 77½, 79½ Bliss.

MISCELLANEOUS

Allen Yoke Riveters, various sizes.
6" Bending roll, cap 4".
1½", 2", 3" National Bolt Cutters.
2", 4", 6", 8" and 12" Pipe Machines.
Standard Cooper and Notcher.
Cleveland Horiz. Rail Straightener.
3½" Morris Plain Radial Drill.
24" Steidle Turret Lathe, 6" hole.
15 lb. Bradley Helve Hammer.
80 lb. Bradley Helve Hammer.
500 lb. Bradley Trip Hammer.
600 lb. Beaudry Power Hammers.

Harris Brothers Co.

35th and Iron Sts., Chicago



SPECIAL BARGAINS!

NEW and USED Nos. 2 & 3 AXLE LATHES,

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BORING MILLS

- 4—Bullard 24" New Era type, vert.
- 2—Niles-Rement-Pond 52", vert.
- 1—Landis No. 35 horiz., floor type.

DRILLS—Upright and Radial

- 3—Snyder 28" vertical.
- 1—Minster D-3, heavy duty.
- 4—3½" Mueller Radials, S. P. D.
- 1—Foote-Burt 4½, 4-spindle, rail.
- 2—New Turner No. 3, vert. turret.
- 1—N.-B.-P. 96" Ridgeway, motor drive, plain radial.
- 1—Western 6', plain radial.
- 1—Baush 6'.

DRILLS—Multiple Spdl., Rect. Head

- 1—Natco No. 14, q. c. g.
- 1—Natco No. 30, 12 spindle.
- 2—New Baush No. 3, 21 spindle.
- 1—New Baush No. 4, 56 spindle.
- 1—Fox, 6 spindle.

PLANERS

- 7—Putnam 26x26x8', 2 heads.
- 1—Woodward & P. 36x36x12', 4 hds.
- 1—Putnam 48"x48"x12', 2 hds., m.d.

MILLERS—Plain, Mig., Univ. & Vert.

- 2—Milwaukee No. 1½ plain.
- 1—Brown & Sharpe No. 2 plain.
- 1—Milwaukee No. 3-B universal.
- 1—Milwaukee No. 3-B plain.
- 2—Briggs type B.
- 2—Taylor & Fenn vertical.
- 1—Becker No. 4B and No. 5C vert.
- 1—Becker 'C' vertical.
- 1—Becker No. 2H, vertical.
- 1—Newton No. 1 duplex.

GRINDERS

- 1—Blanchard No. 16, motor driven.
- 1—Springfield-B., 12x12x48 vert.
- 1—P. & W. 38", vertical surface.
- 1—Brown & Sharpe No. 14 plain.
- 16—Cincinnati No. 2, 12x36.
- 4—Norton 6x32 & 2—Norton 10x36.
- 1—Fitchburg 12x54.
- 1—Norton 16x36.
- 2—Heald No. 60 cylinder.
- 2—Heald Nos. 65 and 70.
- 3—Heald rot. sur. Nos. 210, 255, 260.

PRESSES

- 2—Toledo No. 53, flywheel.
- 4—Toledo No. 55 & No. 55½, grd.
- 1—Bliss No. 1½ dbl. action cam.

GEAR CUTTERS

- 2—Barber-Colman No. 2.
- 4—Hercules 8".
- 2—Brown & Sharpe 3x26.
- 1—Gould & Eberhardt 60", spur.
- 1—Fellows Nos. 61, 6 & 612.
- 1—Gleason 6", 11" & 18", bevel.

TURRET & SCREW MCHS.

- 1—Foster No. 1-B turret.
- 1—Warner & S. Nos. 2-A and 3-A.
- 3—Foster No. 2-B turret.
- 1—Warner & Swasey No. 4, p. f.
- 1—Warner & Swasey No. 2, p. f.
- 1—New Foster No. 10 turret.
- 4—Greenlee, 2½x26" turret.
- 4—J. & L. 2x24.
- 1—J. & L. 2-spindle turret.
- 1—J. & L. 3x36", flat.
- 1—Acme 1½" turret.
- 2—P. & W. 1x14 screw.

SHAPERS AND SLOTTERS

- 1—G. & E. 16".
- 3—New 16" Davis, s. p. d.
- 1—American, 28".
- 1—Newton 10" slotter.
- 1—Pratt & Whitney 10" slotter.

AUTOMATIC SCREW MCHS.

- 8—New Britain No. 24.
- 2—Cleveland 2½" Model A.
- 15—Cleveland ½" to 1" capacity.
- 1—Cleveland 1" t. 1" capacity.
- 7—Gridley 4 spindle, cap. 1½".

LATHES

New Star Lathes, all sizes with all attachments.

- 12—New South Bend 16x8 and 18x8 gap; 21x14.
- 10—New South Bend 15x5.
- 1—LeBlond 26x12, univ. crankshaft.
- 1—Walcott 26x14, 6", q. c. g.
- 1—Johnson 30x12, motor dr.

MISCELLANEOUS

- 1—Acme bolt cutter, 3" cap., motor.
- 1—National bolt cutter, 2-spdl., 1".
- 1—Acme 1" cap. dbl. hd. bolt cutter.
- 1—Landis 1" bolt cutter, dbl. hd.
- 1—Landis 1½" cap., 3-spdl. bolt cut.
- 1—Landis 1½" bolt cutter, dbl. hd.
- 1—Landis 1½" 3-sp. mtr. dr. bolt cut.

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Air Guns

Powell Co., Wm., Cincinnati

Arbors, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Auto-Gages For Dies

Daily Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Automatics

New Britain Machine Co., New Britain, Conn.

Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.
Bowsher Co., N. P., South Bend, Ind.

Balls, Bearing and Burnishing

Abbott Ball Co., Hartford, Conn.

Band Saw Machines, for Metal

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Porter-Cable Machine Co., Syracuse, N. Y.

Bars, Bronze, Cored and Solid

Bunting Brass & Bronze Co., Toledo, O.

Barrels, Tumbling

Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 18th, Chicago

Bearings, Babbitt-Lined Bronze

Bunting Brass & Bronze Co., Toledo, O.

Bearings, Babbitted

Bunting Brass & Bronze Co., Toledo, O.

Bearings, Bronze

Bunting Brass & Bronze Co., Toledo, O.

Belt Shifters

Artisan Mfg. Co., Cincinnati, O.

Bench Legs, Steel

New Britain Mch. Co., New Britain, Conn.

Bending Machines, Hand and Power

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Handley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H. 417 E. 51st, N. Y.
Laurie Mfg. Co., Springfield, Ill.
Fedrick Tool & Machine Co., Philadelphia

Boring Bars

Fedrick Tool & Machine Co., Philadelphia

Boring Bars, Cylinder

Fedrick Tool & Machine Co., Philadelphia

Boring Machines, Horizontal

Avery Drilling Machine Co., Cincinnati
Fedrick Tool & Machine Co., Philadelphia
Rockford Drilling Machine Co., Rockford, Ill.

Bronze

Bunting Brass & Bronze Co., Toledo, O.

Burnishing Equipment, Ball

Abbott Ball Co., Elmwood, Conn.

Bushings, Brass and Bronze

Bunting Brass & Bronze Co., Toledo, O.

Casters for Trucks

Hamilton Caster & Mfg. Co., Hamilton, Ohio

Chains, Power Transmission

Whitney Mfg. Co., Hartford, Conn.

Chucking Machines

New Britain Mch. Co., New Britain, Conn.

Chucks, Collet

Apex Machine Co., Dayton, O.
Hardinge Bros., Inc., 1770 Berteau Ave., Chicago

Chucks, Drill

Apex Machine Co., Dayton, O.
Barber-Colman Co., Rockford, Ill.
Jacobs Mfg. Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 18th, Chicago
Titan Tool Co., Erie, Pa.
Westcott Chuck Co., Oneida, N. Y.

Chucks, Drill and Tap

Barber-Colman Co., Rockford, Ill.
Peter Bros. Mfg. Co., Algonquin, Ill.
Scully-Jones & Co., 2012 W. 18th, Chicago

Chucks, Keyway Cutting

Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Lathe

Westcott Chuck Co., Oneida, N. Y.

Chucks, Wrenchless

Thomas Elevator Co., 31 S. Hoyne Ave., Chicago

Clamps, Die

Daily Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Clutches, Friction

Edgemont Machine Co., Dayton, O.

Cold Saws

Burke Machine Tool Co., Conneaut, Ohio
Peter Bros. Mfg. Co., Algonquin, Ill.

Collets

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Hardinge Bros., Inc., 1770 Berteau Ave., Chicago

Contract Work Wanted

Burke Machine Tool Co., Conneaut, O.
Crowdery Machine Works, C. H., Fitchburg, Mass.

Counterbores and Spot Facers

Glensier Co., J. C., Detroit, Mich.

Cranes, Portable

Canton Foundry & Mch. Co., Canton, Ohio

Crank Pin Turning Machine

Fedrick Tool & Machine Co., Philadelphia

Cutters, Keyseating

Davis Keyseater Co., Rochester, N. Y.
Scully-Jones & Co., 2012 W. 18th, Chicago
Whitney Mfg. Co., Hartford, Conn.

Cutters, Milling

Barber-Colman Co., Rockford, Ill.
Genesee Mfg. Co., Rochester, N. Y.
Whitney Mfg. Co., Hartford, Conn.

Classified Finding Index

Cutting-Off Machines

Peter Bros. Mfg. Co., Algonquin, Ill.

Cylinder Boring Machines, Portable

Pedrick Tool & Machine Co., Philadelphia

Dial Indicators

Federal Products Corp'n, Providence, R. I.
Wallace Brothers, 160 N. Wells St., Chicago

Die Heads, Self-Opening

Apex Machine Co., Dayton, O.

Die Sets

Daily Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Dieing Machines

Henry & Wright Mfg. Co., Hartford, Conn.

Dies, Pipe Threading

Signal & Keeler Mch. Wks., Edwardsville, Ill.

Dies, Self-Opening Adjustable

Bickert-Shafer Co., Erie, Pa.

Drilling Machine Heads, Multiple

National Automatic Tool Co., Richmond, Ind.
United States Drill Head Co., Cincinnati

Drilling Machines, Bench

Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Horizontal

Rockford Drilling Machine Co., Rockford, Ill.

Drilling Machines, Multiple Spindle

Avey Drilling Machine Co., Cincinnati
Henry & Wright Mfg. Co., Hartford, Conn.
National Automatic Tool Co., Richmond, Ind.
Reed Co., Francis, Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric

Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Stow Flexible Shaft Co., Philadelphia, Pa.
Strand Co., N. A., 5001 N. Lincoln St., Chicago
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Post

Henry & Wright Mfg. Co., Hartford, Conn.
Mueller Machine Tool Co., Cincinnati

Drilling Machines, Radial

Henry & Wright Mfg. Co., Hartford, Conn.
Mueller Machine Tool Co., Cincinnati
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Sensitive

Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Conneaut, Ohio
Henry & Wright Mfg. Co., Hartford, Conn.
Leland-Gifford Co., Worcester, Mass.
Reed Co., Francis, Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Vertical

Avey Drilling Machine Co., Cincinnati
Henry & Wright Mfg. Co., Hartford, Conn.
Leland-Gifford Co., Worcester, Mass.

Rockford Drilling Machine Co., Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.
Barber-Colman Co., Rockford, Ill.
Henry & Wright Mfg. Co., Hartford, Conn.
Reed Co., Francis, Worcester, Mass.

Dust Handling Equipment

Kilcherbocker Co., Jackson, Mich.

Emery Wheel Dressers and Cutters

Precision Truing Machine & Tool Co., Cincinnati, O.
Taylor & Fenn Co., Hartford, Conn.

Feeders, Oil and Soda Water

New Britain Machine Co., New Britain, Conn.

Flexible Shafts

Strand Co., N. A., 5001 N. Lincoln St., Chicago

Forgings, Hollow Bored

American Hollow Boring Co., Erie, Pa.

Furnaces, Heat Treating, etc.

Kidder, A. B., Canton, Ohio

Furniture, Machine Shop

Kalamazoo Steel Goods Co., Kalamazoo, Mich.
New Britain Machine Co., New Britain, Conn.

Gauges, Piston and Piston Ring

Federal Products Corp'n, Providence, R. I.

Gauges, Thread

Federal Products Corp'n, Providence, R. I.

Gear Cutting Machines

Barber-Colman Co., Rockford, Ill.

Grinding Machines, Belt

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Peerless Surfacing Machine Co., Troy, N. Y.

Grinding Machines, Bench

Bodine Electric Co., 2256 W. Ohio St., Chicago
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Hisey-Wolf Machine Co., Cincinnati

Grinding Machines, Cutter, Reamer and Tool

Gallmeyer & Livingston Co., Grand Rapids, Mich.

Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Cylinder

Whitney & Son, Baxter D., Winchendon, Mass.

Grinding Machines, Cylindrical

Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Die

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Disc

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Porter-Cable Machine Co., Syracuse, N. Y.

Classified Finding Index

Grinding Machines, Drill

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Face

Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Internal

Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
Whitney & Son, Baxter D., Winchendon, Mass.
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Portable Electric

Rodine Electric Co., 2256 W. Ohio St., Chgo.
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Stow Flexible Shaft Co., Philadelphia, Pa.
Strand Co., N.A., 5001 N. Lincoln St., Chgo
Winconsin Electric Co., Racine, Wis.

Grinding Machines, Snagging

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mch. & T. Co., Grand Rapids, Mich.

Grinding Machines, Surface

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Grinding Machines, Tap

Gallmeyer & Livingston Co., Grand Rapids, Mich.

Grinding Machines, Tool

Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Universal

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Av., Chicago
Racine Tool & Machine Co., Racine, Wis.

Hammers, Air

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Belt & Motor Driven

Nazel Engineering & Mch. Wks., Philadelphia

Hammers, Power

Nazel Engineering & Mch. Wks., Philadelphia
Quickwork Co., St. Marys, Ohio

Hammers, Riveting

Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago
Quickwork Co., St. Marys, Ohio

Hobs

Barber-Colman Co., Rockford, Ill.

Hoists, Electric

Thomas Elevator Co., 31 S. Heyne Ave., Chicago

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio

Keyseating Machines

Rucher-Smith Co., East Liverpool, Ohio
Burr & Son, John T., Brooklyn, N. Y.
Chattanooga Mch. Co., Chattanooga, Tenn.
Davis Keyseater Co., Rochester, N. Y.
National Machine Tool Co., Cincinnati
Whitney Mfg. Co., Hartford, Conn.

Lathe Accessories and Attachments

Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Bench

Hardinge Bros., Inc., 1770 Berteau Ave., Chicago
Monarch Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Engine

Carroll Mch. Tool Co., A. V., Cincinnati, O.
Hardinge Bros., Inc., 1770 Berteau Ave., Chicago
Monarch Machine Tool Co., Sidney, O.
Mueller Machine Tool Co., Cincinnati
Porter-Cable Machine Co., Syracuse, N. Y.
Sebastian Lathe Co., Cincinnati, O.
Sidney Machine Tool Co., Sidney, O.
South Bend Lathe Works, South Bend, Ind.

Lathes, Fox Monitor

Barker Co., Wm., Covington, Ky.

Lathes, Gap

Carroll Mch. Tool Co., A. V., Cincinnati, O.

Lathes, Short Bed

Artisan Mfg. Co., Cincinnati, O.
Monarch Machine Tool Co., Sidney, O.
Porter-Cable Machine Co., Syracuse, N. Y.
Sidney Machine Tool Co., Sidney, O.

Lathes, Turret

Monarch Machine Tool Co., Sidney, O.

Mandrels, Expanding

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Metal Cutting Machines, Sheet

Quickwork Co., St. Marys, Ohio

Milling Attachments

Burke Machine Tool Co., Cincinnati, Ohio
Taylor & Fenn Co., Hartford, Conn.

Milling Cutters

Barber-Colman Co., Rockford, Ill.

Milling Machines, Bench

Burke Machine Tool Co., Cincinnati, Ohio

Milling Machines, Hand

Burke Machine Tool Co., Cincinnati, Ohio
Whitney Mfg. Co., Hartford, Conn.

Milling Machines, Plain

Burke Machine Tool Co., Cincinnati, Ohio
Gallmeyer & Livingston Co., Grand Rapids, Mich.

Milling Machines, Portable

Fedrick Tool & Machine Co., Philadelphia

Milling Machines, Spline

Taylor & Fenn Co., Hartford, Conn.

Classified Finding Index

Milling Machines, Vertical
Hurke Machine Tool Co., Conncant, Ohio
Taylor & Fenn Co., Hartford, Conn.

Mills, Adjustable Hollow
Genesee Mfg. Co., Rochester, N. Y.

Motors, Electric
Reliance Electric & Eng. Co., Cleveland
Wisconsin Electric Co., Racine, Wis.

Oil Cups
Gits Bros. Mfg. Co., 1940 S. Kilbourn Av.,
Chicago
Tucker, W. C. & F. C., Hartford, Conn.

Oil Hole Covers
Tucker, W. C. & F. C., Hartford, Conn.

Pattern Shop Machinery
Towlesy Mfg. Co., John T., Cincinnati

Pins, Leader And Dowel
Danly Machine Specialties, Inc., 4913 Lincoln
Ave., Chicago

Pipe Bending Machines
Pedrick Tool & Machine Co., Philadelphia

Pipe Cutting and Threading Machines
Bignall & Keeler Mch. Wks., Edwardsville, Ill.

Planers, Valve Seat, Portable
Pedrick Tool & Machine Co., Philadelphia

Polishing and Buffing Machines
Hisey-Wolf Machine Co., Cincinnati
Independent Pneumatic Tool Co., 809 W.
Jackson Blvd., Chicago
New Britain Machine Co., New Britain, Conn.
Wilmarth & Morman Co., Grand Rapids,
Wisconsin Electric Co., Racine, Wis. (Mich.)

Presses, Arbor
Atlas Press Co., Kalamazoo, Mich.
Lourie Mfg. Co., Springfield, Ill.
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Sheldon Machine Co., 403 E. 29th, Chicago

Presses, Broaching
American Branch & Mch. Co., Ann Arbor, Mich.
Lourie Mfg. Co., Springfield, Ill.

Presses, Foot
Rockford Iron Works, Rockford, Ill.
Taylor & Fenn Co., Hartford, Conn.

Presses, Power
Hendley & Whittemore Co., Beloit, Wis.
Lashbough-Jordan T. & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Punch
Henry & Wright Mfg. Co., Hartford, Conn.
LaSalle Machine Works, 3013 S. LaSalle St.,
Chicago
Lewthwaite Mch. Co., T. H., 417 E. 31st., N. Y.
Lashbough-Jordan T. & M. Co., Elkhart, Ind.
Lourie Mfg. Co., Springfield, Ill.
Rockford Iron Works, Rockford, Ill.

Presses, Screw
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Lourie Mfg. Co., Springfield, Ill.
Towlesy Mfg. Co., John T., Cincinnati

Pulley Machinery
Avey Drilling Machine Co., Cincinnati

Punch Press Feeds
Rockford Iron Works, Rockford, Ill.

Punch, Shear and Bender, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco
Ave., Chicago

Punches, Hand
Armstrong-Blum Mfg. Co., 341 N. Francisco
Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H., 417 E. 31st St.,
New York
Whitney Metal Tool Co., Rockford, Ill.

Punches, Power
Hendley & Whittemore Co., Beloit, Wis.

Punches and Dies
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H., 417 E. 31st., N. Y.
Rockford Iron Works, Rockford, Ill.

Racks, Bar Stock
New Britain Machine Co., New Britain, Conn.

Reamer Holders
Nicholson & Co., W. H., Wilkes-Barre, Pa.

Reels, Extension
Cincinnati Specialty Mfg. Co., Cincinnati, O.

Riveting Machines
Blomquist-Eck Machine Co., Cleveland, O.
Grant Mfg. & Mch. Co., Bridgeport, Conn.

Rod Cutters
Armstrong-Blum Mfg. Co., 341 N. Francisco
Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H., 417 E. 31st., N. Y.
Tucker, W. C. & F. C., Hartford, Conn.

Scraping Machines, Hand & Pneumatic
Anderson Brothers Mfg. Co., Rockford, Ill.

Screw Driving Machines, Automatic
Reynolds Machine Co., Massillon, Ohio

Screw Driving Machines, Bench
Hergl Manufacturing Co., Bridgeport, Conn.

Screw Driving Machines, Portable Electric
Hisey-Wolf Machine Co., Cincinnati

Screw Machines, Automatic
New Britain Mch. Co., New Britain, Conn.

Second-Hand Machinery
Bath & Co., Cyril J., Cleveland, O.
Bennett Mch. Co., 50 Church St., New York
Botwinik Brothers, New Haven, Conn.
Brown Machinery Co., St. Louis, Mo.
Brownell Machinery Co., Providence, R. I.
Clark Machinery Co., Cleveland, O.
Dickow Machinery Co., Fred C., 2105 W.
Lake St., Chicago
Dart Motor Car Co., Flint, Mich.
Eastern Machinery Co., Cincinnati, O.
Emerman & Co., Louis E., 1761 Elston Ave.,
Chicago
Easley Machinery Co., E. L., 655 Washington
Bldg., Chicago

Classified Finding Index

Second-Hand Machinery—Continued

Fitzsimmons-Cole Mch. Co., Pittsburgh, Pa.
 Harris Bros. Co., 35th & Iron, Chicago
 Hess-Schenck Co., Cleveland, O.
 Hill, Clarke & Co., 649 W. Washington
 Blvd., Chicago
 Hyman & Sons, Joseph, Philadelphia
 Johnson & Sons Machinery Co., Wm. C.,
 St. Louis, Mo.
 Jones Machine Tool Co., Cincinnati
 Little Co., W. P., Cleveland
 Lucas & Son, J. L., Inc., Bridgeport, Conn.
 MacIntosh & Co., Sherrod B., Cleveland, O.
 McCabe Lathes & Machinery Corp., J. J.,
 149 Broadway, New York
 McCoy-Brandt Mch. Co., Pittsburgh, Pa.
 McDonald Machinery Co., St. Louis
 Marr-Galbreath Mch. Co., Pittsburgh, Pa.
 Mid-West Machine Tool & Supply Co.,
 Davenport, Ia.
 Mollitor Mch. Co., Chas., 118 S. Clinton St.,
 Chicago
 Morey and Co., Inc., 408 Broome St., N. Y.
 Niles-Bement-Pond Co., 111 Broadway, N. Y.
 Norton-Broadway Mch. Co., Cincinnati, O.
 O'Brien Machinery Co., Philadelphia
 Osborne Mch. Co., D. M., Cleveland, O.
 Osborne & Sexton Mch. Co., Columbus, O.
 Oviatt & Co., D. C., Cleveland, O.
 Patterson Tool & Supply Co., Dayton, O.
 Pittsburgh Model Engine Co., Pittsburgh, Pa.
 Randle Machinery Co., Cincinnati
 Reeve-Fritts Co., 57 S. Desplaines, Chicago
 Reliance Mch. Sales Co., Pittsburgh, Pa.
 Russell Motor Axle Co., No. Detroit, Mich.
 Russell Machine Co., Pittsburgh, Pa.
 Saltzman, B. L., 524 W. Van Buren St., Chgo.
 Standard Screw Products Co., Detroit, Mich.
 Stocker-Rumely-Wachs Co., 117 N. Jefferson
 St., Chicago
 Stoehr Mch. Co., A. M., 844 N. Wells St.,
 Chicago
 Strafer, A. F., 30 Church St., New York
 Strong, Carlisle & Hammond Co., Cleveland
 Tuber, Velich & Co., Inc., Lake & Desplaines
 Sts., Chicago
 Winterer, Herman L., Philadelphia
 White Mch. Co., A. D., 108 N. Jefferson
 St., Chicago
 Wright, David A., Inc., 601 W. Monroe St.,
 Chicago, Ill.

Shafts, Flexible

Stow Flexible Shaft Co., Philadelphia, Pa.

Shafts, Steel

American Hollow Boring Co., Erie, Pa.

Shaping Machines

Columbia Machine Tool Co., Hamilton, Ohio
 Osborne & Sexton Mch. Co., Columbus, O.
 Rhodes Mfg. Co., Hartford, Conn.
 Smith & Mills Co., Cincinnati
 Universal Machine & Tool Co., Canton, O.

Shears, Hand

Armstrong-Hum Mfg. Co., 341 N. Francisco
 Av., Chicago
 Hendley & Whittemore Co., Beloit, Wis.
 Kidder Mfg. Co., J. F., Burlington, Vermont
 Lewthwaite Machine Co., T. H., 417 E. 31st
 St., New York
 Oliver Mfg. Co., Buffalo, N. Y.
 Quickwork Co., St. Marys, Ohio
 Tucker, W. C. & F. C., Hartford, Conn.
 Whitney Metal Tool Co., Rockford, Ill.

Shears, Power

Hendley & Whittemore Co., Beloit, Wis.
 Quickwork Co., St. Marys, Ohio

Sheet Metal Working Machinery

Quickwork Co., St. Marys, Ohio

Slotting Machines

Rhodes Mfg. Co., Hartford, Conn.

Spacing Washers

Detroit Stamping Co., Detroit, Mich.

Stools and Chairs, Factory

Kalamazoo Steel Goods Co., Kalamazoo, Mich.

Straightening Machines

Towsley Mfg. Co., John T., Cincinnati
 Whitney Metal Tool Co., Rockford, Ill.

Stud Setters

Apex Machine Co., Dayton, O.

Tap Extractors

Walton Co., Hartford, Conn.

Tapping Machines and Attachments

Avey Drilling Machine Co., Cincinnati
 Burke Machine Tool Co., Conneaut, Ohio
 Leland-Gifford Co., Worcester, Mass.
 Ribbert-Shafer Co., Erie, Pa.
 Whitney Mfg. Co., Hartford, Conn.
 Whitney Metal Tool Co., Rockford, Ill.

Threading Tools

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Tool Holders

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Tools, Boring

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Tools, Lathe and Planer

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Tools, Machinists'

Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago

Tools, Spot Facing

Genesee Mfg. Co., Rochester, N. Y.

Trucks, Machine Shop

New Britain Machine Co., New Britain, Conn.
 Towsley Mfg. Co., John T., Cincinnati

Turntables

Canton Foundry & Machine Co., Canton, O.

Universal Joints

American Tool Works, Inc., Hartford, Conn.
 Apex Machine Co., Dayton, O.
 Borgeson Mfg. Co., Inc., Torrington, Conn.
 National Automatic Tool Co., Richmond, Ind.

Valve Grinders

Independent Pneumatic Tool Co., 600 W.
 Jackson Blvd., Chicago

Valves

Powell Co., Wm., Cincinnati

Vises, Drilling Machine

Armstrong-Hum Mfg. Co., 341 N. Francisco
 Av., Chicago
 Armstrong Bros. Tool Co., 308 N. Francisco
 Av., Chicago
 Thomas Elevator Co., 31 S. Hoyne Ave.,
 Chicago

Vises, Machinists'

New Britain Machine Co., New Britain, Conn.
 Parker Co., Charles, Meriden, Conn.

Vises, Shaper

Columbia Machine Tool Co., Hamilton, Ohio

Wood Working Machinery

Hendley & Whittemore Co., Beloit, Wis.
 New Britain Machine Co., New Britain, Conn.
 Porter-Cable Machine Co., Syracuse, N. Y.
 Towsley Mfg. Co., John T., Cincinnati
 Whitney & Son, Baxter D., Winchendon, Mass.

IF ANY of us could tell just who and where are our next year's customers, what juicy savings we could make in our selling expenses. Because we don't and can't know, is it not a primary duty we owe ourselves to see to it that every one who might buy of us should know we are on our toes and anxious to sell him? In a word, should we not plan our advertising in such a way that all our possible customers may know of us and of what we are seeking to sell them?

In the machine tool line such advertising necessarily must include the book you are now reading, because no other medium completely covers the field. A little better than half of it may be covered by using all other available media, but why do a half-way job, when it is so very simple and inexpensive to do a complete one?

Index of Advertisers

A

Abbott Ball Co.....	54
American Broach & Mche. Co....	30
American Hollow Boring Co.....	26
American Tool Works, Inc.....	38
Anderson Bros. Mfg. Co.....	56
Apex Machine Co.....	39
Armstrong-Blum Mfg. Co.....	5
Armstrong Bros. Tool Co.....	13
Artisan Manufacturing Co.....	21
Atlas Press Co.....	32
Avey Drilling Machine Co.....	49

B

Barber-Colman Company.....	59
Barker & Co., Wm.....	16
Bath & Co., Cyril J.....	74-75-76-77
Bennett Machinery Co.....	84
Bignall & Keeler Mche. Works...	71
Bodine Electric Co.....	64
Borgeson Manufacturing Co.....	38
Botwinik Brothers.....	89
Bowsher Co., N. P.....	56
Brown Machinery Co.....	73
Brownell Machinery Co.....	87
Bucher-Smith Co.....	34
Bunting Brass & Bronze Co.....	33
Burke Machine Tool Co.....	55
Burr & Son, John T.....	18

C

Canton Foundry & Mche. Co....	68
Carbon Steel Company.....	92
Carroll Machine Tool Co., A. V.	24
Chattanooga Machinery Co.....	35
Cincinnati Specialty Mfg. Co.....	66
Clark Machinery Co.....	94
Columbia Machine Tool Co.....	27
Colven, James M.....	22
Cowdrey Machine Works, C. H.	26

D

Danly Machine Specialties, Inc...	7
Davis Keyseater Co.....	37
Detroit Stamping Co.....	14
Dickow Machinery Co., Fred C.	87
Dort Motor Car Co.....	95

E

Eastern Machinery Co.....	85
Edgemont Machine Co.....	44

Emerman & Co., Louis E.....	82
Esley Machinery Co., E. L.	92

F

Federal Products Corporation.....	42
Fitzsimmons & Cole Machinery Company.....	73

G

Gallmeyer & Livingston Co.....	67
Genesee Manufacturing Co.....	17
Gits Bros. Mfg. Co.....	12
Glenzer Co., J. C.....	48
Grant Mfg. & Machine Co.....	54

H

Hamilton Caster & Mfg. Co.....	36
Hardinge Bros., Inc.....	28
Harris Bros. Co.....	107
Hendley & Whittemore Co.....	9
Henry & Wright Mfg. Co.....	72
Hergi Manufacturing Co.....	46
Hess Schenck Co.....	83
Hill, Clarke & Co., of Chicago...	101
Hisey-Wolf Machine Co.....	53
Hyman & Sons, Joseph.....	106

I

Independent Pneumatic Tool Co.	46
--------------------------------	----

J

Jacobs Manufacturing Co.....	60-61
Jarecki Machine & Tool Co.....	31
Johnson & Sons Mch. Co., Wm. C.	90
Jones Machine Tool Co.....	92

K

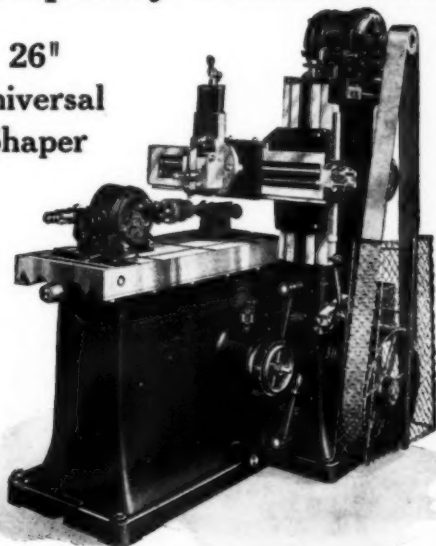
Kalamazoo Steel Goods Co.....	10
Kidder, A. B.....	40
Kidder Mfg. Co., J. F.....	6
Knickerbocker Co.....	29

L

LaSalle Machine Works.....	6
Leland-Gifford Co.....	51
Lewthwaite Machine Co., T. H.	14
Little Co., W. P.....	78
Loshbough-Jordan T. & M. Co.	4
Louie Mfg. Co.....	32
Lucas & Son, J. L., Inc.....	86-91

The Ram Stroke is replaced with
A Speedy Table Stroke

26"
Universal
Shaper



The firm, even table stroke, up to 40 a minute, insures a new degree of shaper precision, with speed. And as it takes heavier cuts than the ordinary shaper, it increases production.

In addition to its greater precision and larger output it also covers a wider range of work—up to and including that of a small open-side planer. Long pieces may be inserted on its open side and clamped to table.

Built by Tool Makers—let us tell you how well

Universal Machine & Tool Co.
CANTON, OHIO

Index of Advertisers—Continued

M

MacIntosh & Co., Sherod S.....	80
McCabe Lathe & Machinery Corporation, J. J.....	99
McCoy-Brandt Machinery Co.....	82
McDonald Machinery Company.....	77
Marr-Galbreath Machinery Co.....	93
Mid-West Machine Tool & Supply Co.....	98
Molitor Machinery Co., Chas.....	94
Monarch Machine Tool Co.....	20
Morey and Co., Inc.....	109
Mueller Machine Tool Co.....	98

N

National Automatic Tool Co.....	41
National Machine Tool Co.....	34
Nazel Engineering & Mch. Wks.....	11
New Britain Machine Co.....	120
Nicholson & Co., W. H.....	3-23
Niles-Bement-Pond Co.....	80
Norton-Broadway Mch. Co.....	94

O

O'Brien Machinery Co.....	89
Oliver Mfg. Co., W. W.....	28
Osborne Machinery Co., D. M.....	100
Osborne & Sexton Mch. Co.....	104
Oviatt & Co., D. C.....	97

P

Parker Company, Charles.....	62
Patterson Tool & Supply Co.....	93
Pedrick Tool & Machine Co.....	70
Peerless Surfacing Mche. Co., Inc.....	65
Peter Bros. Mfg. Co.....	8-44
Pittsburgh Model Engine Co.....	96
Porter-Cable Machine Co.....	16
Powell Co., The Wm.....	40
Precision Truing Machine & Tool Company.....	57

Q

Quickwork Co.....	8
-------------------	---

R

Racine Tool & Machine Co.....	10
Randle Machinery Co.....	88
Reed Co., Francis.....	48
Reeve-Frits Company.....	82
Reliance Elect. & Engineering Co.....	2

Reliance Machinery Sales Co.....	86
Reynolds Machine Company.....	15
Rhodes Manufacturing Co.....	25
Rickert-Shafer Co.....	69
Rockford Drilling Machine Co.....	45
Rockford Iron Works.....	4
Russel Motor Axle Co.....	103
Russell Machine Co.....	81

S

Saltzman, B. L.....	78
Scully-Jones & Co.....	18
Sebastian Lathe Co.....	20
Second-Hand Machinery... 73 to 109	
Sheldon Machine Co.....	30
Sidney Machine Tool Co.....	22
Smith & Mills Co.....	27
South Bend Lathes Works.....	19
Stocker-Rumely-Wachs Co.....	102
Stoehr Machinery Co., A. M.....	90
Stow Flexible Shaft Co.....	66
Strafer, A. F.....	88-89
Strand & Co., N. A.....	52
Strong, Carlisle & Hammond Co.....	79

T

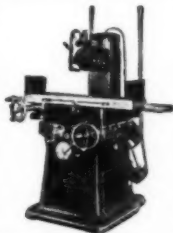
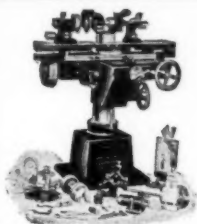
Taylor & Fenn Co.....	47
Thomas Elevator Co.....	
Thompson Grinder Co.....	64
Titan Tool Co.....	50
Towaley Mfg. Co., John T.....	36
Tubor, Velick & Co., Inc.....	91
Tucker, W. C. & F. C.....	13

U

United States Drill Head Co.....	50
Universal Machine & Tool Co.....	117

W

Wallace Brothers.....	42
Walton Co.....	52
Westcott Chuck Co.....	24
White Machinery Co., A. D.....	105
Whitney Mfg. Co.....	43
Whitney Metal Tool Co.....	12
Whitney & Son, Baxter D.....	58
Wilmarth & Morman Co.....	119
Winterer, Herman L.....	84
Wisconsin Electric Co.....	63
Wright, David A., Inc.....	108



Wilmarth & Morman Co.

Universal Cutter and Tool Grinders
Surface Grinders
Improved New Yankee Drill Grinders

BECAUSE of:—

**Precision
Rigidity
Convenience of
Control and
Reputation**

are rapidly becoming **STANDARD** Equipment in the important plants of the world.

Wilmarth & Morman Co.

*Manufacturers of Precision
Grinding Machinery Since 1900*

**1185 Monroe Avenue, N.W.
GRAND RAPIDS, MICH.**

The "New Britain"
Revolving Screw Rack
Saves the Assembler's Time



With
Adjustable
Compartments
and
Any Number
of Shelves

JUST THE THING for keeping screws, nuts, bolts and other small parts at the assembler's elbow, saving his time and your money. Regularly furnished, as shown, with 48 compartments, the upper ones holding about two quarts each, and the lower ones twice as much. These may be varied to suit your needs. Revolves at a touch on ball bearings. Bulletin No. 1210 describes it.

ALSO WRITE for Bulletins of what you need in Bench Legs, Bench Drawers, Work Stands, Portable Vise Stands, Adjustable Stools, Bar Stock Racks, Tote Boxes, Portable Lathe Pans, etc. Better write today, lest you forget.

The New Britain Machine Company

"Shop Furniture
Originators"



**New Britain,
Conn. U.S.A.**

